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Original Communications

THE SCIENTIFIC SIDE OF THE MANUFACTURE OF DENTAL PRODUCTS, INVOLVING THE QUESTION OF CO-OPERATION OF DENTIST AND MANUFACTURER

EDWARD C. KIRK, D.D.S., Sc.D., L.L.D., Philadelphia, Pa.

Read before Canadian Dental Association, Ottawa, August, 1920.

I wish first of all to express my thanks to your essay committee for the honor they have done me in asking me to present a paper to the Canadian Dental Association upon this topic of their own selection which has always appealed strongly to my interest, because I am convinced that the problem which it involves is one of the elemental factors that lie at the root and origin of dental development and progress.

It is a complex question, one that has relation not only with all of our professional activities, but it also involves elements of human psychology expressed as attitudes of mind toward professional ethics, of altruism and of human selfishness as related to our ideals, our status and progressive development as a profession. It would therefore be presumptuous on my part, or indeed upon the part of anyone, to attempt a complete solution of all the intricacies of the case so that I can only hope to direct your attention to some of its high lights and to so state the problem that we may perhaps establish a common ground of understanding, which, after all, is the essential starting point in all discussions which like the one under consideration involve diverse points of view.

By the scientific side of the manufacture of dental products, I take it that we mean the application of scientific principles to the methods employed in the manufacture of dental products and likewise the use of the same principles in the prosecution of research investigations leading to the discovery of new methods or materials used in dental manufactures.

It is not necessary that I should discuss in any detail the obligation of industry as a whole to science for its past development or its present advancement. A single instance will serve to emphasize the fact that to science and the scientific method as applied to the arts and manufactures, humanity owes the largest debt of gratitude for the advancement of all that we imply by the term civilization. When Sir Henry Bessemer conceived the idea that by blowing cold air through molten cast iron the combustion of its contained carbon would generate sufficient heat to maintain the mass in a fluid state while the carbon content was reduced to the point which would result in the production of steel, he hit upon a scientific principle that at the time was looked upon as the dream of a mad man, but after trials and disappointments the history of which reads like a romance, his efforts were crowned with success and the result was the greatest metallurgical discovery of the ages. The results which have flowed from the discovery of the Bessemer steel process have been infinite in variety and immeasurable in their importance. Railway and ocean transportation, the telegraph, the telephone, electric power generation and transmission, all the means for the rapid intercommunication of peoples, the advancement of the world's commerce, in short, the production of all the factors of civilization received their greatest impulse by reason of Bessemer's fundamental conception, and it is staggering to contemplate the chaos that would follow if to-day humanity was deprived of the use of Bessemer steel.

The promise of human betterment and of individual reward which the successful applications of science to industry hold out has stimulated scientific study in its relation to and in its connection with industrial activities to an extent that is now practically universal. Indeed, the fact that successful manufacturing is absolutely dependent not only upon precise technical methods but upon a scientific knowledge of the physical and chemical properties of the materials employed and their behavior under the conditions of manufacture and use, is so generally conceded that no industry of even moderate scope and dimensions is conducted without a scientific engineering department or without at least access to such a service.

The character and extent of the industry determines the scope of the field of scientific engineering upon which its successful operation depends. Where but a single product is manufactured, as in some of the metallurgical industries, the scientific problems presented for solution, while they may be large in the aggregate, are relatively limited as to kind or class. On the other hand, when the industrial output is varied in kind, the scientific engineering problems presented for solution are complex and vary over a wide field of scientific investigation. The manufacture of dental products is a typical example of the latter class of industry. So extensive and varied are the products utilized in dental practice that there seems to be no visible limit to the range of scientific problems that the manufacture of dental supplies presents. Indeed, it is difficult to particularize as to what are dental supplies, so that we are compelled to depend for a definition upon the general statement that dental supplies comprise everything a dentist uses in his practice. As one manufacturer, roughly speaking, is making in the neighborhood of some two thousand groups of items under the above general designation, and these do not cover the whole category, it will give some idea of the varied range of problems both scientific and practical with which the manufacturer of dental supplies is confronted. The problem is so greatly complicated by the variation in kind of the products that all successful manufacturers of dental supplies are compelled to maintain laboratories equipped with a scientific personnel covering a very wide range of specialized training in scientific research work, constituting a force that is expected to be competent to solve whatever problems of manufacture or research may arise. Modern practice in the manufacture of dental products is no longer empirical but is almost universally the result of the application of the scientific method to the art of production.

It will doubtless be of interest to review briefly the extent and character of the contributions which the dental profession and the dental manufacturers have relatively made to the development of dental science and art which collectively have contributed to the advancement of dental practice. For the data comprising this phase of my paper, I am indebted to one who for thirty years has had unequalled opportunity and whose specialty it has been to study and record the sources from which new developments have arisen in dentistry, to assay their usefulness and to supervise their refinement to the point of production on a commercial scale. I feel that a general understanding of what the dental profession and the manufacturer have relatively contributed in the way of improvement in dental practice as the outgrowth of invention and discovery in what we broadly designate by the term "research" should have the beneficial effect of stimulating both the profession and the manufacturer toward more earnest effort and higher attainment in co-operative as well as in individual activities.

In operative technic the preponderance of accomplishment naturally lies with the profession. The accomplishment of the manufacturer in this field lies in the working out of special technic for apparatus, devices and materials which he has designed and produced. Some contributions of this kind from the manufacturer have been of great importance, the value of which should not be overlooked. In the field of Pathology and Therapeutics the advances have been made largely through the efforts of members of the dental profession. The profession is also entitled to the credit of having originated and perfected advances in Materia Medica, although it is a fact that some of the most valuable and widely known and used preparations had their origin and were perfected in the laboratories of manufacturing and pharmaceutical chemists.

In the special field of anesthetics, the manufacturer or the non-dental chemist has played a most important part. The discovery of nitrous oxid as an anesthetic, it is true, was made by a dentist but the perfection of this gas as an anesthetic agent was accomplished by the manufacturer. Ethyl chlorid was evolved not by a member of the dental profession, but by a commercial house. The same is true of Novocain and a number of other local anesthetics, which in their time were much in vogue. It is, however, true that some of the best known local anesthetic preparations were developed by members of the dental profession.

In chemistry (apart from medicinal and anesthetic preparations), the contribution has been almost wholly from the manufacturer. In dental cements, for instance, the big achievements have been attained through the efforts of the manufacturer. In the early days, and in fact, up to and within the last decade, the manufacturers of dental cements relied for their formulae upon certain dentists who had devoted much of their lives to the study of dental cements. For the most part, these cements were not satisfactory, and the manufacturers were forced to employ chemical engineers and to equip laboratories especially for the purpose of carrying on research for the development and manufacture of dental cements of various kinds. As a result of this, the profession is now supplied with cements developed solely by the manufacturer, and which are immeasurably superior to the older cements developed by members of the profession.

While among the large variety of special waxes and various compounds the formulation of certain outstanding preparations were accomplished by dentists, the majority of these compounds were developed by the manufacturer. Credit to the late Dr. G. V. Black is due for the greatest single achievement in alloys for filling teeth, but the fact must not be overlooked that the perfection of these alloys and the methods of their manufacture have been accomplished by the manufacturer. The manufacturer is far in the lead on dental rubbers, splendid advances having been made in the past few years.

Operative instruments, such as excavators, chisels, etc., which do not involve engineering problems, are for the most part devised by members of the profession. An operative instrument is so personally related to the dentist, being, in a sense, almost a part of him, that he is best able to say how these instruments should be fashioned. Hence, most of the instruments that have been used in dentistry have the names of dentists attached to them, the dentist either having submitted to the manufacturer the patterns which he has designed or explained his peculiar needs to the manufacturer. No one has done more in this particular field than the late Dr. G. V. Black.

Drawing a clear line of demarcation between those instruments or tools which do not involve engineering problems and those which do involve such problems, it has rested with the manufacturer to make large contributions in this latter class of tools. By way of illustration, we have but to think of the one great outstanding achievement in excavating burs, to wit, the "Revelation Bur," which overshadows all other advances that have been made in this most essential and widely used tool. Here there was a real engineering problem to solve. Various forms of burs had been devised by dentists as well as by manufacturers and tried out by the profession, but it was the "Revelation Bur" with its peculiar cut or formation of blades that solved the problem, and now practically every excavating bur is more or less an imitation of the "Revelation."

In Prosthetic dentistry the honors may be equally divided with perhaps the profession slightly in the lead. Most of the more widely used articulators have been invented by dentists. On the other hand, the best known vulcanizers were devised by the manufacturer, who also refined and perfected most of the prosthetic devices that have been in the hands of the profession.

In Orthodontia, practically all appliances have been invented by members of the profession. The manufacturer, however, has refined them and designed and built machines for producing them.

While in the all-important field of artificial teeth, the profession has made occasional valuable contributions, it has been the manufacturer who has contributed most largely. In no field of dentistry has there been so much activity among the individual members of the profession as in artificial teeth. There is, and for a long time has been, a veritable craze for inventing teeth, particularly those of the interchangeable variety. Of the great number of artificial tooth inventions, most of them are but mere repetitions or slight modifications of old forms, while many of them are wholly impracticable and valueless.

Perhaps in no field of dentistry has the manufacturer done more real constructive work with the least assistance from the profession than in the dental office and college equipment, including chairs, engines, spittoons, bracket tables, etc. The explanation of this is that these things involve engineering problems, which, as a rule, can only be solved by mechanical engineers. Without overlooking the important contributions of Drs. Morrison and Wilkerson, the dental chairs now in use were developed by the manufacturer, specially trained chair experts and mechanical engineers being employed for this purpose. The so-called "Unit" or equipment stand which found such ready acceptance by the profession, had its inception with and was developed by the manufacturer. The same is largely true of dental engines, handpieces, anglepieces, fountain spittoons and the numerous other things entering into the make-up of the dental office equipment.

As great as have been the achievements of the manufacturer in the designing and perfecting of dental apparatus, tools and materials, even greater, perhaps, have been the manufacturer's achievements in the designing and building of the special machinery by which these articles are made. The profession seeing and handling these articles can understand and appreciate what these articles and contributions of the manufacturer mean, but the machinery employed for producing them, the profession does not see and knows little or nothing about, for they are hidden away in factories and laboratories which are but seldom visited by only a few dentists. Here, however, mostly unknown to or unthought of by the profession, the manufacturer has done some of his best work, has put forth his greatest efforts and achieved his greatest successes.

The rivalry between manufacturers to provide superior products each with the underlying motive of keeping himself in the forefront of the business is most active and results in the profession being furnished with superior supplies, which enables it to more conveniently, profitably and expeditiously perform its work and at the same time add to the comfort of the patient.

The subject of dental research and invention, the devising and perfection of new and improved apparatus, tools and materials for the use of the dental profession should not be considered without some reference to the necessity of protecting the things developed, which may be afforded either by secrecy or by patents. It having been demonstrated through a long course of years beyond peradventure of a doubt that our patent system has been the one great vitalizing factor in stimulating the marvelous growth of this country's manufacturing industries, the importance and necessity for providing the manufacturer with protection, at least for a limited period, must be admitted.

The novel things which the manufacturer develops through the instrumentality of his human and physical equipment, and his lavish expenditure of money and likewise the things which he acquires by purchase from the individual dentist, can be more or less adequately protected by patenting the things which he sells and by keeping secret or patenting the manufacturing machines, processes and formulae. It is because of this protection, which is essential to the industry, that the manufacturer feels justified in putting forth the necessary effort and providing the necessary funds.

With the profession as a whole or any section of it, or any group of dentists as distinguished from the individual dentist, means must be found for producing for the use of the profession any material results arising from this concerted professional effort. Of necessity, this means of producing must be a manufacturer. Having by concerted effort, presumably under the auspices of a general or national association, a state or city society, or a special organization or group, developed a new and useful apparatus, tool or material, the profession, or at least that part of it responsible for this particular achievement, is confronted with the problem of allocating it to a manufacturer or manufacturers. Of course, the profession can dedicate the results of its efforts to the public by placing it before all the manufacturers, leaving any or all of them to manufacture it if they see fit to do so, or the profession can endeavor to make a special arrangement with one particular manufacturer. In the latter case, the new thing must be protected to make it worth while for the manufacturer to invest the capital to provide the necessary equipment for manufacturing the article. In the former case, there is no incentive for the manufacturer to undertake it because he knows that all the other manufacturers can make it if they so desire.

Herein lies a wide difference between concerted professional action on the one hand and action of the individual manufacturer and the individual dentist on the other. Until some means are found to adjust this serious difference, until proper means are found for producing what has been developed, research carried on by the profession collectively cannot possibly attain the success it should achieve. Yet it is obviously of the utmost importance that the profession make greater effort than it has heretofore done to advance dental research. Hence, the necessity for working out some plan whereby the results of the united effort of the profession and the manufacturer can be utilized to the best advantage.

It is evident that there is a growing recognition by the dental profession of the importance of scientific research as related to the improvement of its service and a corresponding feeling that the desired results would be more quickly and practically attained by some plan which would co-ordinate the research activities of the dental profession and the manufacturers respectively. The fact that you have invited me to discuss this subject with you is evidence of such a growing state of mind as I have referred to.

Historically the growth of appreciative recognition of the importance of the research factor in dentistry is interesting. I think the motif of scientific investigation in dentistry may be said to have had its inception in connection with the investigation of the causation of dental caries. Leber and Rottenstein, Milles and Underwood, Vignal, Legros, Magitot, and their collaborators who prepared the way for W. D. Miller's epoch making work, gave practical emphasis to the scientific method as the only sure way to the solution of our material professional problems. In the United States a decided impulse was given to the interest in dental research by a paper read before the Dental Society of the State of New York at its annual meeting in 1906 by Dr. G. V. Black, himself a trained scientist, entitled "Consideration of Evidence in Scientific Investigation," in which paper a clear distinction was made by the essayist between purely speculative guesswork and rational inductive, scientific reasoning with emphasis strongly placed upon the productiveness and relative certainty of the latter.

The effect produced by Dr. Black's paper was noticeably impressive, so much so that the society at once took steps to create a committee on dental research and to provide a substantial fund for its prosecution. The example thus created has been, I believe, the stimulus which has developed a number of such activities in dental societies, among others the National Research Institute of the National Dental Association at Cleveland, Ohio, and your own research organization. The productiveness of these various research centres is, in my opinion, handicapped in so far as the problems under consideration are those relating to dental supplies by lack of co-operation between these professional research centres and the engineering and research departments of the manufacturers of dental supplies. The situation thus created has the serious disadvantage of division of effort and duplication, often multiplication, of work, disadvantages which in these modern days of intense practicality and high efficiency are regarded as a form of economic immorality. In the light of past professional attitudes of mind and the ethical standards inherited from our professional forbears, it is difficult to see how, without sacrifice of some elements of professional sentiment, a co-operative relation could be brought about between the two sources of dental research activity now separately conducted by the profession and the manufacturer respectively.

To those wedded to the ethical idols of the past the thing is impossible, yet as evidence that we are as a matter of fact living under a new dispensation of revelation of the truth, that the world is in fact being remade in an ethical as well as in a material sense, it is interesting to note that in the important field of anaesthesia the impossible has happened in the formation in 1919 of the National Anaesthesia Research Society, an organization composed of anaesthetists and specialists in anaesthetic research work with the addition to its membership of manufacturers of anaesthetics and anaesthesia apparatus.

This combination of professional and commercial elements has been found to work most harmoniously, and in the brief period of two years since its formation the society has not only brought out in its bulletins much original matter bearing upon the subject of its interest, but has done much to stimulate a general interest in the scientific study and use of anaesthetics in medicine, surgery and dentistry. The membership has largely increased, and covers a majority of the several states of the Union.

As this single example of co-operative effort between the profession and the manufacturer gives encouraging promise of a successful career, there appears to be no reason other than that of questionable sentiment why similar effective co-operative activities related to the other important features of dental practice should not be instituted. That there is much need for such co-operation cannot be successfully denied.

One of the most important and crying needs of the dental profession as well as of the manufacturer is an official standardization of operative dental technique that will eliminate the disharmonies now so manifest in our operative methods and a revision of our educational methods on the basis of a standardized system. Surely when the United States Government was obliged to buy one selection of outfit to treat the teeth of its soldiers and a different outfit to treat the teeth of its sailors, because the dental authorities in the case were out of agreement as to operative technique, it is time that dental teachers composed their differences and agreed upon a common standard.

In closing this desultory paper, let me direct your attention to one important fact, and that is that dental research, like all research, is successful only in proportion to the spirit which prompts it. If the motive is wholly selfish the results will more than likely be found to be contaminated by error or by intellectual dishonesty which has always been the short cut to the selfish man's goal. Not all men are mentally, morally or temperamentally equipped for research work. If it be true that "poets are born, not made," the same holds true of the scientific research worker who in an ideal sense has consecrated his life and powers to the interpretation of the truths of nature into terms of human understanding. These men work by inspiration, and the truth as it reveals itself to them is their reward and compensation. Needless to say, they are rare, but when men cast in such a mold are happily found in dentistry, the profession can do itself no greater or fruitful service than to relieve them of all financial concern and so place them that they may pursue their work unhampered by disturbing pecuniary considerations. Finally, it must be noted that specialization is as much a characteristic of scientific research as it is of every other field of human activity. Nature is limitless, the human mind functions within a relatively narrow groove, and each of us is temperamentally adapted usually to but one field of activity. Pope has well said:

> "One science only will one genius fit,
> So vast is Art, so narrow human wit."

In times past the village doctor being the local oracle, either by his own estimate, by common consent, or both, was consulted upon every subject embraced within the ken of man and his advice was taken seriously. Now the public has learned the practical importance of the knowledge gained by special training; hence the village doctor, while valued for his special knowledge, has ceased to be regarded seriously as a compendium of universal knowledge. All of which bears upon the fact that dental research to be successful and practically useful in extending the range and efficiency of dental service to humanity, must be conducted by specialists and always by or in co-operation with those dentally trained and who have acquired by experience a sympathetic detailed understanding of the extent and character of service which it is the function of the dental profession to render to humanity.

DISCUSSION.

THE PRESIDENT: We are under obligation to Dr. Kirk for his unique and unusual presentation of a subject like this before a dental convention. I am sure that there will be an animated discussion on the subject. I will ask Dr. Nolin to open the discussion.

DR. NOLIN: Mr. Chairman and gentlemen: My good friend Dean Dubeau was on the programme to open the discussion on Dr. Kirk's paper, but at the last moment he had to leave, and I was asked to take his place. Handicapped as I am by possessing only a limited knowledge of your beautiful language, I hesitated at first, but upon reflection I accepted, feeling that I could not shirk a duty or become a slacker.

I have not seen Dr. Kirk's paper: I have heard it now for the first time. But what strikes me most in Dr. Kirk's very able essay is his last affirmation about the standardization of operative technique. From a manufacturer's standpoint, his point is indeed well taken; from a scientific standpoint, from a dental standpoint, from a professional standpoint, however, I would like to take issue with him.

If there comes a day when professional teaching shall be standardized; when every teacher of, say, operative dentistry will limit himself to the teaching of principles which are accepted by every other teacher, on that day the progress of dental teaching will have stopped. Progress in science is the result of individual effort and individual research; it is completely personal. I believe, therefore, that it would be wrong to over-standardize teaching; to over-standardize professional callings.

If we look backward and ask ourselves what effect the efforts of dental manufacturers have had on the progress of the profession, we must acknowledge that both good and bad results have been brought about. In the early days of the profession it is undeniable that some dental manufacturers helped considerably in the progress of the profession. As time went on; as efforts multiplied; as dental schools were organized, the efforts of the profession towards progress became more collective, if I may use the word. Groups began to form; ideas were compared, and the professien began to stand on its own feet. But as the members of the profession became more numerous, dental manufacturers became more lucrative; and there came a day when some of us asked ourselves whether the dentist was dealing with the public or whether the manufacturer was dealing with the public through the dentists. Now, Mr. Chairman, I say this without any idea of offering adverse criticism; if anyone is to be criticized in this respect, it is more the dental profession than the dental manufacturers.

A few days ago I went into the office of one of my ex-students, a very clever chap. I found him with a very beautiful office—at least, a most expensively equipped office; I take back the word "beautiful." He had a six or seven hundred dollar chair; a twelve hundred dollar unit of some kind, and a six hundred dollar cabinet. In looking around his office I was curious enough to open some of the drawers of the cabinet. I saw there, three or four broaches; half a dozen excavators —some broken—but very few practical instruments. Yet that boy had an office on which he had spent, perhaps, three or four thousand dollars. I agree with Dr. Kirk that the members of the dental profession and the manufacturer should get together with a view to bringing about the solution of some scientific and economic problems which are before them. The day has arrived, I believe, when we must recognize the fact that too much importance has been given to what I might call commercial equipments and too little to really scientific equipment.

Dr. Kirk spoke about patents. He says, and justly so, that a manufacturer who undertakes the manufacture of expensive apparatus must be protected. With that I agree, to a certain point. He would like the profession, either collectively or each individual acting for himself, to carry on research work to help the manufacturer. There was a time some years ago when every other dentist made the pretension that he could invent some new thing. Once in a while a useful invention was brought out by some dentist, and it was the condition then that that dentist could get a patent on his invention and derive some benefit from it. But in modern times the profession has decided that it would be unethical for the dentists to do any such thing—and rightly so; for a scientific discovery should be for the advantage of all the profession; the really scientific man should be satisfied with the glory of helping his profession and helping humanity. But on the other side the result has been that individual efforts have diminished and that inventing has been left almost entirely to the manufacturer.

Now, some manufacturers, including the very well known and very important company with whom Dr. Kirk is connected, have seen the light and have undertaken research work in the interests of dental progress; and men of Dr. Kirk's wide talents and great knowledge have devoted themselves to this work. In my opinion that is a step in the right direction. Dr. Kirk has left the practice of dentistry and dental teaching to enter into industry; perhaps I may venture to ask him to make a few suggestions to the dental manufacturers.

I told Dr. Kirk privately this morning that there is still much room for progress in the matter of dental supplies and equipment. We are now buying chairs and units and cabinets at extraordinary prices. But it is not the price that I want to criticize. My criticism is directed against the appearance of the very expensive apparatus which you see in the average professional man's office. Would it not be possible to give at least some kind of artistic appearance to all these very expensive things? A patient of mine, an American—we in Canada occasionally happen to have an American patient—visited sometime ago the Chamber of Horrors at Sing Sing, that place where they electrocute people who have not been good. He came to my office, which is an old office and, I must acknowledge, very poorly equipped. He said: "Well, this is a comfort." I said: "How is that?" "Well," he said, "I like to see a dental office which is furnished something like a private room; most dental offices remind me of the electrocution chamber at Sing Sing, with all this apparatus hanging from the ceiling, with these chairs full of nickel, with these square-faced cabinets, and, withal, the emptiness of the rooms." This is not a scientific aspect of the question, but it is a practical phase of it, and the manufacturers could, I think, improve the general lines and appearance of dental furniture.

From a purely manufacturing point of view, the question might well be asked: Is progress being made in all lines? Some years ago we had a chair called the Wilkeron chair. That chair was so disposed that a patient could be supported from head to foot in a supine position, as on a surgical table. Well, that chair has gone out of manufacture; it can no longer be bought, and if any of us have to resort to an anaesthetic with ether or chloroform, we are told by the medical man that he would like the patient to be operated upon in his own office on a surgical chair. How is it that to-day we cannot get such a chair, though we pay three times as much for the chairs as we did some years ago? It seems to me that in this respect we have retrogressed instead of progressed.

In connection with the manufacture of operating instruments I fully agree with Dr. Kirk when he says that the variety of taste among dentists certainly retards progress. The number of instruments actually necessary for operative dentistry is limited to a few; and everybody should be able to get what he needs from among those few.

Mr. Chairman, I am sorry that lack of preparation prevents me from discussing this paper as it should be discussed. I will conclude by joining in offering our sincere thanks and congratulations to Dr. Kirk and expressing the pleasure we have had in listening to him and meeting him again.

THE PRESIDENT: We shall be glad to have this discussion continued. I am sure that Dr. Nolin has done his duty nobly, considering the short time he has had for preparation; he has presented some phases of the question that are of great interest. Is there any further discussion?

DR. SPARKS (Kingston): I am glad to see that the manufacturers are eleminating the fine-grooved serrations on the handles of operating instruments and are getting down to a smooth handle. It has been very hard to keep the serrated handles from rusting.

DR. KIRK: Mr. President and gentlemen, I want to thank you—and especially do I wish to thank the President—for the courteous and attentive hearing that has been given to my talk. There is a point that I did not bring out in my paper but which I can refer to now in the light of the discussion by Dr. Nolin—that is, the attitude of the manufacturer toward these problems. The manufacturer is constantly being criticized for not doing this or that, or for doing some other thing. Let me say that the type of criticism that is constructive in character, such as we have had from the gentleman who opened the discussion, is not only welcome, but is earnestly sought by the manufacturers. We have endeavored to gather about us—not in an official way, but in a friendy, co-operative way—a considerable number of professional men who are interested in the kind of problems with which we are concerned and to whom we can go for criticism. It has been part of my function during the past two or three years to get into contact with and seek the criticism and advice of such men.

It is surprising how strongly a habit fixes itself upon the mind and how difficult it is to change a method or line of thought in the slightest particular. The question of instrument handles has been referred to. I suppose those of you who shave yourselves have become wedded to a particular type of razor, and nothing but a general cataclysm of some sort could induce you to change that razor. Doubtless the same applies to your penknife or to your fountain pen. I know from my own experience that I am a creature of habit in that respect. We have had as much trouble over the question of the instrument handle as if it involved membership in the League of Nations. After consultations with experts, and after talking the matter over with thoughtful, conservative men, we finally decide upon a change, and the new form of handle is issued. Then the cry comes up from various members of the dental profession: "Why didn't you do it that way? Why didn't you do it this way? Why didn't you do it some other way?" And out of all this medley of opinion we have tried to solve the question upon the basis of the view of the majority and of the greatest good to the greatest number.

Only a short time ago at Hot Springs, Virginia, I ran across an old friend of my college days. He seized me by the arm, got me into a corner, formed a hollow square around me so that I could not get out, and proceeded to tell me why he "had it in" for the company with which I was connected because they had ceased to manufacture a certain type of excavator. "What do you mean, anyhow?" he said. "Why do you put yourselves in the position of dictating to the dental profession what the dental profession shall or shall not use?" I said, "I do not admit we do that, but at any rate, why do you think we do?" "Well," he said, "I have tried to get a certain type of excavator, and I cannot get it." I said, "The answer to your question as to 'dictation' is that 'ninety-nine and forty-four one hundredths' of the dental profession are demanding Black's instruments. You and I are back numbers; we belong to the past; we learned other methods. But the dental profession to-day are using and demanding a different class of instrument. We know that to be true by the records of manufacture and sale that very clearly indicate what it is that they want. Now you are, in effect, asking that we stop manufacturing these instruments which are so largely in demand; that we take skilled labor off the job of supplying the dental profession with the things we cannot make fast enough to meet the general demand, and put them on the little job of making half a dozen or a dozen of these instruments for you, and so delay the service of the majority by just that much." It would seem that it is a simpler and less costly procedure for one man to learn to use the Black excavators than to hold up the service of the general profession in order to manufacture instruments specially for him, or the small minority that he represents. It is the dental profession which dictates the policy of our service, not the manufacturer.

Dr. Nolin: Do you not believe that in times past when small manufacturers were willing to do small jobs for individual dentists, the personal effort thus induced on the part of the dentist made for the better progress of the profession?

Dr. Kirk: In those times that Dr. Nolin speaks of, the dental profession was not as large as it is now. The profession and the manufacture have grown *pari passu;* they have developed together. Take, for example, the conditions that prevailed during the late war, when not only our own factory, but, I suppose, the factories of all dental manufacturers in the United States, were running overtime. We were running twenty-two hours out of twenty-four—allowing just time enough for the machines to cool down and to enable the men to get something to eat—all in an effort to supply what the United States Government required and what we were able to give to the civilian profession. So with that kind of strain put upon the productive side of the industry, it is a serious matter for the dental manufacturer to supply individual types of instruments to those who happen to be wedded to an idol.

This brings me to the other and related point brought out by Dr. Nolin, and it is a very important one. He was quite right in raising an objection to absolute standardization. I object to that just as strongly as he does. I recognize in his remarks an indication of one characteristic quality of the French race. One thing that glorifies France to-day is her individualized manufacture; she puts something of her personal and individual soul into her products—a condition which, in America, is reduced by the requirements for quantity production to a soulless mechanical process. Undoubtedly, progress and variation go together. But it is also true that the great bulk of supplies must be made in large quantities—and when I speak of standardization, I do not mean absolute standardization in the sense of eliminating individualism. While I was connected with the Council of National Defence in Washington, I went over the catalogues of the various manufacturers with a view to selecting a standard instrument outfit for the army and for the navy, and I was astounded to find there were no less than fifteen or eighteen different kinds of chip-blowers, to blow the chips out of the cavity. These different types all had to be manufactured because there were fifteen or eighteen different groups of men who wanted individualized types of chip-blowers.

Now, I put it to you as a fair question: Would it not be possible for the dental profession as a whole to take these fifteen or eighteen different types of chip-blowers and apply some principle of standardization that would meet all reasonable requirements? Why this great number of types of chip-blowers for the simple process of blowing debris out of a cavity? As you multiply these things you multiply costs and you limit production. I went recently through the various dental hospitals in England, and most of the men I met who were experts in the extracting of teeth laid emphasis on the fact that they were quite able to extract every tooth in the human mouth—except those cases of impacted teeth (special cases)—with three or four forceps; yet one manufacturer is compelled to keep in stock something like two hundred forms of extracting forceps to supply individual demands. It would take a man with a brain like a card-index to tell what particular kind of forceps he should select for a given extraction if he had that many to choose from. So you see, we run to extremes in that way. It is a rational standardization that I am interested in.

I would like to say one word also—because I did not elaborate on it in the paper—with regard to the question of patents which has been referred to by Dr. Nolin. I fully recognize that an ethical consideration is involved. I am a professional man. I was raised in the atmosphere of the profession, and I have been just as strongly imbued with the professional faith as any of you here; in fact, I have helped to build it up. I have invented several things which to-day bear the names of other men. I had one manufacturer serve notice on me that I had no right to use in the dental school with which I was connected a certain device I myself had invented and lectured on—one of my students had taken out a patent on it in the meantime, after learning of it from me, and sold it to a manufacturer who was exploiting the device commercially. So I have had something to do with invention.

I am not the author of that statement referred to by Dr. Nolin which is quoted in my paper; I merely quoted from a man who had a great deal of contact with the question of professional patents. It is true that in the commercial production of any device the manufacturer must have some means of protection. The late Samuel S. White told me that in the production of the first cable engine he expended over $50,000 before he put the first one on the market. Now, that was not for the buying of the patents; that was for the development of the device and the refining of it; the making of the tools necessary to its manufacture—he had expended in cash over $50,000 before the first engine was offered for sale on the salesroom floor. Very well; after that engine came out a replica of it was made by another manufacturer which cost that manufacturer nothing. The point, then, is that the manufacturer must have some means of protection in order to get back the original expenditure of money that he made in producing the thing. I wonder if you could possibly understand—I could not until I got in contact with the work—how much of the time of many valuable men it takes to bring to the point of effective manufacture an idea, an invention, that is presented in its first crude state for production by the manufacturer. It is remarkable the amount of time, energy and hard cash that are spent in developing these ideas to the point of manufacturing. They come in very crudely expressed; often they are the ideas of men who are dreamers—God bless them, for we cannot get along without them—but they are seldom submitted in a perfected condition ready for production, and it takes a great deal of time and money to do that. So the manufacturer must have some protection in his effort to bring that invention to a point where the profession, broadly speaking, can get the benefit of it. The dental profession is a very large body, and the amount of material they use in their practice is enormous. When any new invention comes out, a very large number of dentists will want it, so it must be produced in quantities; otherwise it cannot be produced cheaply.

Perhaps I have talked too much, but I would like to leave this thought with you: While the problem which I have presented is an extremely complex and intricate one and involves many points that are debatable, both in economics and in ethics, the fundamental fact is that the dental profession and the dental manufacturer are inextricably bound together so far as their interests are concerned. They are both in the service of humanity. The dental profession is serving humanity in the most important phase of its need, that is, its health need. The dental manufacturer is serving humanity in the same way, through the instrumentality of the dental profession. That is the way the manufacturer looks at it; we are purveyors to the dental profession, and we must see to it that the dental profession gets what it wants, and that it gets it in sufficient quantities and of the very best possible character and quality. There is, as Dr. Nolin has stated, the artistic side of it. It is quite true that some of the equipment which is furnished to dental offices is monstrous from the artistic standpoint; and yet there are among the dental profession a considerable majority who will have just that kind of monstrosity and nothing else. That is what they demand, and if they do not get it, then there is another source of trouble.

So, fundamentally, it is a question of education, and to that end let me urge you to submit, either collectively or individually, to the manufacturer whatever ideas you may have, whatever criticisms you desire to offer. Let us get at them; let us get together and talk things over and see if we cannot, collectively or co-operatively, bring about a more satisfactory state of things which will eventuate in a larger and more dignified and effective service to humanity.

FACIAL NEURALGIAS IN THEIR RELATION TO HEREDITARY NEUROSES

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It is obviously difficult to show the direct connection between neuroses of any kind and their direct effects upon the functioning of any organ or group of organs. It is possible, however, for us to obtain some fairly accurate idea of what is implied in some of the terms now so much in use to explain or attempt to explain what we call nervous phenomena. Ordinarily we make use of such terms as *functional neuroses, psycho-neuroses, neurasthenia* and *hysteria*. We may, speaking generally, define as functional a disorder which does not imply organic change in tissues and which may be either nervous or bi-chemical in origin. The term neurosis is commonly applied to what would seem to be a hereditary instability in nervous tissues. A psycho-neurosis would, however, be a nervous disturbance based primarily upon conscious or subconscious influences, while neurasthenia may be defined as a neurosis dependent upon temporary organic changes due for instance to exhaustion induced either by disease as for instance an exhausting attack of typhoid or due to extreme exhaustion such as that during a prolonged vigil in the trenches in war or to a mother's waiting on a sick child or to a lack of the normal development of suprarenal and other endocrine glands.

Due to some one or more of these causes we may expect to find local disturbances of function such as sleeplessness, mental disturbances, nervous dyspepsia, or hyper-sensitiveness of one or more of the nerves, and amongst these will come the particular object of our study, the trigeminal nerve, which is the great sensory nerve of the face and the head. But since the vegetative system underlies all others, I fancy that the most obvious disturbance of the nervous system which appears will be in what we may call disturbances of the stomach. We all recognize at once the type of nervous anaemic child which is fastidious in its tastes, irregular in its appetite, and liable to what we term disorders of digestion. As we know to-day, this condition is often due to hereditary causes, and is especially seen in the child of a family where either parent inherits, to say the least, an unstable nervous system or to a tuberculous diathesis, or it may be directly due to the presence in the child of a tuberculous infection which has occurred in infancy, either bovine in character or due to infection from some human source. Such children are further found in many instances to be lacking in what we call firmness of tissue and due to the lack of lime salts, resulting often in an early decay of the teeth and general malnutrition.

As is obvious, a poor digestion, which depends directly upon an inadequate secretion from normal digestive glands, will be the phenomenon first to show itself. We speak to-day of hyper-acidity of the stomach. In some cases it is directly dependent upon the hereditary type of tissue, and recently the terms *sympathetico-tonic* and *vago-tonic* have been used to distinguish persons in whom the sympathetic nervous system is on the one hand hyper-aesthetic or unduly sensitive to external impressions or have an indigestion dependent upon the extreme emotional character of the individual. On the other hand, in the vago-tonic type, called sometimes the para-sympathetic, we see a storage of the reserves, and with this is associated an over-activity of the lymphoid structures of the body. The latter type is interesting from our standpoint in that it presents often distinct physical signs, such as a tendency to skin eruptions as urticaria and over-development of the lymphatic system and a tendency to anaphylactic shock. Such persons seem liable to asthmatic seizures, laryngeal spasms and croup, low blood pressure, hyper-chlorhydria and spastic constipation, all directly associated with an oversensitive vagus or pneumogastric. I have often thought this term fulfills best what we are accustomed to call the rheumatic or gouty diathesis.

Now some of the obvious effects of a hereditary neurosis would be not only the disturbance of gastric and intestinal secretions, but also disorders of digestion promptly showing themselves in the production of toxins in the bowel absorbed into the blood, resulting at times in constipation and intestinal stasis, and at others in nervous diarrhœa and fermentation and in both of which toxins are formed and are absorbed into the blood and affect directly the nervous system and the functioning of organs.

Before taking up our special subject, that of neuralgias affecting especially the face and teeth, it is well to review for the moment the blood and nerve distribution of the teeth. I need not refer to the matter of the development of the teeth, which all persons here know so much better than I; but it is well to recall that in the development of the teeth we have the interesting fact of the epithelium on the surface dipping down and meeting the papilla whose growth goes on like other tissues but is being slowly enveloped by the bony casing of the jaw, while its dentine is built up from the connective tissue cells supplied with blood capillaries and nerve filaments, which as the tooth is completed, fill up the pulp cavity which they enter through a very narrow opening at the base of the root. It is to these nerve filaments then and blood supply that our special interest attaches. The blood vessels, which supply them, are regulated by the vaso motor nerves which supply the muscular tissue of the smaller vessels and arterioles. We have these both as constrictor nerves and dilator nerves. The regulating centre of the vaso-motor system primarily is in the gray mater of the floor of the fourth ventricle of the brain, and it is the effect of this centre of specialized nerve cells, which sends fibres to subsidiary vaso-motor centres through the spinal cord to the ganglia of the sympathetic system lying in front of the spinal column. The stimulus maintained by the vaso-motor nerves maintains a gentle blood pressure in all the arterioles and capillaries of the body to ensure adequate nutrition to every part. If this centre is destroyed, then the blood pressure everywhere falls and venous congestion takes place. Or if some sudden stimulus or shock occurs, the vaso-constrictors activate in the same way and the blood for the moment, is prevented from entering the capillaries. This result is readily brought about by some sudden shock to the emotions through the eye, ear or other special sense, or it may be due to subconscious influences rising into consciousness, and similarly affecting the vaso-motor centres. So important does this emotional shock appear to be that we have in it a seeming explanation of the whole series of mental phenomena based upon nerve reflexes, which may reach the extent of what was known as shell-shock in the army, and has been for many years recognized as a type of neurosis known as hystero-epilepsy. Obviously the underlying fact in these various mental states, which may be called functional, is that of an unstable, irritable and imperfectly nourished nervous system. It is reasonable to suppose, and is undoubtedly a fact, that cells of the gray matter of the cerebrum and nuclei of the nerve centres inherit their special qualities for good or ill just as do the primary cells of any other organ of the body. While I am certain that a great deal too much has been attributed to the permanent influences of germ plasm in evolution, some indeed going so far as to make it a principle as important as gravitation, yet it cannot be doubted that the successive generations of nerve cells in the formation of the tissues of the body must necessarily transmit the qualities or attributes of their cell ancestors. On the other hand we have to realize that from the moment of birth an external environment operates along with the internal environment to create through nutrition not only the body tissues of the different organs through the primary senses, such as the desire for food or the quest for food, but that within a few weeks of birth is the beginning of consciousness and the experiences of the child derived from external impressions are so frequently repeated that we may fairly assume that they will in a large degree tend to override hereditary abnormalities and, if subject to proper control, so build up both the cell qualities of the cerebrum and sympathetic nervous system that such will function normally under the ordinary conditions of life.

We have just referred to the primary sense in the new born being a desire for food and may now turn to the problem of nutrition as being one which is directly under our control. Probably in nothing are the results of mal-nutrition more evident than in those diseases which the dental surgeon has to deal with, but it is mostly the end results that come under his care. To-day we know much about the results of what are called "Deficiency Diseases," though twenty-five years ago I think there was not a text book in English which referred even to infantile scurvy. I recall a patient of mine, diagnosed, I believe, as the first of its kind in Ontario, which showed the spongy gums and periosteal inflammation of the tibiae and the other acute signs of this disease. After the failure of several child specialists to diagnose the trouble and I was left helpless, I found luckily an article in the weekly number of the London "Lancet" entitled "Thirteen Years' Experience of Infantile Scurvy or Acute Rickets," by Sir Thomas Barlow. The article gave a complete picture of the disease and indicated the cause and supplied the remedy. Within five days of administration of sterilized grape juice the acute symptoms were relieved and recovery was rapid.

In this first case then of "Deficiency Disease" we find that there was a lack of vitamines of the "C" group or that which relieves scurvy by fruit juices. There is little doubt, however, but that it is the vitamines of the "A" group or those which are fat-soluble, which are of the greatest importance in general nutrition. Prof. Mendel finds them especially in cod liver oil, which I have for years, indeed, looked upon as the most valuable means of reconstruction in defective nutrition. Other vitamines soluble in water belong to the "B" group and are found in grains, in fruit, and in the yoke of egg, and such are liable to be dissolved out in cooking since they are especially concentrated in the germ of the seed, and are further liable for this reason to be removed during the milling process. They withstand boiling for a short time, but are destroyed after 130 degrees C., and are commonly called anti-neuritic and are known to be absent in food where beri-beri is present.

Such is the picture given us of the splendid work by Mendel, Osborne and McCollum in America, by Hopkins and Drummond in England, and by McCarrison in India, and with all there is a general agreement that there is a something present in vitamines such as an enzyme which provides the condition for the metabolizing of food in the tissues. At the same time experiments in feeding have shown that in the amino-acids present in various substances the tissue compounds of the body can be synthesized from the proteins and that of other basic food stuffs. Thus the monkeys fed with protein, fats, carbohydrates and salts develop normally if the special vitamine is supplied. Thus we are led to suppose that neucleic acids, phosphatides, creatin and leucin, etc., are built up from basic foodstuffs.

I have attempted briefly to present the bare facts of this most intricate but all important matter, and may now turn to some of the obvious earlier facts of "Deficiency Disease." The study of the effects of experiments in feeding of monkeys, etc., is most interesting. Thus rats fed on food lacking the vitamines in Group "A" developed ophthalmia and microbes grew freely on the mucous membranes of the eye. McCarrison refers to a family of improperly fed children who suffered from mucous disease in India especially marked with *acidosis*. The disease was directly due to a lack of proteins and vitamines with an excess of carbohydrates. The resulting clinical effects in such cases are dislike for food, loss of weight, asthenia and anaemia, with eczema, vomiting, diarrhœa and muscular weakness ending in paralysis. The pathological changes are seen in atrophic changes in the sub-maxillary glands, the pancreas and coats of the stomach and bowels, with congestion and digestive mucous changes throughout the stomach and intestines, which in their weak state are readily invaded by bacteria. When these conditions are present even streptococci produce ulceration of the stomach. In such cases giving food with vitamines resulted in a rapid improvement and a case is given where a man had for years been an invalid and had resorted to lavage of the stomach, who was cured in a short time of his anaemia and neuralgic pains by a full diet containing vitamines.

To complete our resume, however, of conditions favoring neuroses we may turn to the toxaemias induced under such conditions as pregnancy. In Dr. A. W. Bourne's lectures he points out that throughout the term there seems present in the blood of the mother a persistent toxine, due to the growth of the ovum, which is absorbed through the placenta, and which seems to develop in the blood an anti-toxine tending to antidote free proteins which seem to be present in the blood. A curious fact is found in many of these cases, where there is often a lack of formation or at least of the excretion of urea, namely an increase of acetone (C3 H30) which is especially produced from fat when carbohydrates are lacking in the blood. Its presence in excess is productive often of a destructive neurosis, since it tends to produce congestion of the terminal capillaries of such organs as the adrenals and membranes of the brain. These conditions seem intimately related to the frequent mental disturbances during the period with associated neuroses, such as trigeminal neuralgia. This reference brings us directly to the consideration of a series of neuroses having a distinctly psychical element, growing out of impressions, often sub-conscious in character and which even apart from consciousness produce potent effects upon mental activities. Through the vital activity of the nervous system from the lowest reflexes to the highest neuro-psychic activities the functions of the automatic nervous system are controlled by those higher in the scale and these again until the gray matter of the cortex is reached. For instance, the activity of the optic thalamus is normally under the control of the cerebral cortex. The thalamus is the centre of the more emotional parts of sensation peculiarly associated with effectiveness, as of pleasure, pain and other emotions, so that whenever this centre is relieved from control of the gray matter of the cortex, or of consciousness and will, the patient is very sensitive on the emotional side to either class of sensations, whether of pleasure or pain. These are directly associated with the vaso-motor system, which is in intimate relation to the ductless glands and conditions in them the sudden discharge into the blood of it may be adrenalin, thyroidin, pituitrin, or other special glands and which have given rise to the idea that special substances, volatile odors, spoken of by the old German teachers and termed gemeingrefuhl were associated with the idea of pleasure and pain. Should there be cerebral disease or the temporary loss of function in the cortex the responses of the uncontrolled sensations which affect the thalamus might be productive of most serious results; but in mental growth the cerebral control of such centres gradually increases and thus the simple reflexes instead of being a menace are steadily inhibited through the conscious processes in the cortex of the brain. The time may come, however, when this mental control ceases to be automatic or normal and the individual becomes conscious of the need of some means for resisting such imperative claims as that of fear as, for instance, going into battle, or some sense desire. Such a situation necessarily develops a mental conflict and in order that a person's actions shall remain normal such sensations must be sternly pressed into the background. Now it is at this point that the persistent coming into consciousness of such ideas may result in physical and mental troubles of a certain sort due to the attempted repression. This repression is not absolute, perhaps, and is but half-hearted, and so we have constantly cropping up into consciousness the ghost of something desired, something lost, something left undone, or done wrongly, which ends in the disturbance of normal mental processes. The inevitable result, if such be long continued, is the effect not only upon mental but also the vegetative processes, and so we have appearing dyspepsia, headache, insomnia, and mental aberrations.

Fortunately for us Nature seems to provide that the persisting stimulus gradually loses its more acute effects and as it were through habit the sense of shock is lessened; we are not overpowered either with joy or sorrow or, in other words, the mind learns to adapt itself to the mental environment. Should the outcome, however, of this emotional strife have been a failure of health and vital energy, then the person will have become a victim of what we call *irritable weakness* with fatigue, loss of sleep and neurasthenia, until we have what we call an exhaustion psychosis. It is at this point we find appearing mental aberrations often of the most peculiar character as frequently appeared in soldiers during the war when some fancy seized the tired brain and resulted in perhaps a loss of memory, a confusion of personality or some behavior such as that recently illustrated in the case of Dougan who seems to have lost himself for ten days, which often seems to be a regression or activation in the direction of some more primitive or youthful kind of action. Whenever the perfect mental and physical control, under which action becomes automatic, such as in games, or the control of the motor or airplanes becomes disturbed, an uncertainty develops as to sureness of the results of automatic action, results in disturbances of the sensory-motor equilibrium, and to the individual it may become a source of worry and result in dreams and nightmares in which old events of a disturbing kind seem often to predominate. In such cases *adaptation* is what we must depend upon in the nervous system to have it respond to a stimulus of continuous and constant intensity in order that its reactions may steadily decrease. Thus our ability to shut out disagreeable street noises or other external impressions becomes a measure of our ability to function normally with regard to the external world around us and is equally true with regard to our ability to push into the background unpleasant mental experiences. Whether the disturbance be functional, psychic, neurasthenic or hysterical, the only diagnosis of the situation of practical value is in the ability to lay bare the forces which underlie the morbid state and to find the mental experiences which have originally set them in motion. The form of the psychosis depends upon the particular person, his special habits and constitution. The success in dealing with his problem will prove in the intricacies of civil life often more difficult than the simpler environment of warfare. Our successes will depend on our ability to discover the processes producing the neuroses, and if we succeed the casual factors underlying his phenomena can mostly be readily worked out. Often, however, the patient is conscious of the experiences lying at the bottom of his own trouble, but refuses to face them by bringing them into consciousness, and different experts are still disputing whether such disturbances are the more readily dealt with by bringing them thus into full view in the mind of the patient or to push them into the realm of forgetfulness by covering them up with a new set of healthy ideas. It would seem, however, generally agreed that the problem is best met by making a patient realize his own state as being one which need not be looked upon as peculiar and may be easily remedied and, as in making the person who has hysterical aphonia find out that he can speak, the evidence of the fact becomes the primary and sufficient means of cure. In such difficult cases the wisdom and sympathy of the true physician may be enough to remove the mental inhibition or mental change while a new environment may be advised, or finally hypnosis may be the occasion under which new and healthy impressions are made to displace the mental obsession. One of the physical effects of such psychoneuroses may show itself in acidosis or excess of acetone (C3 H3 O) in the urine, and is often present in epilepsy and melancholy. Post Mortem appearance shows an intense minute injection of the paiarachnoid membrane of the brain and degeneration in nerve cells. The acetone produces hemolysis of red corpuscles. Acidosis is supposed to favor bacterial infection as T. B. The adrenals help in protection against these autolytic tendencies. Potassium citrate restores fat metabolism to normal. Glucose or sodium bicarbonate are given in attacks.

I have dwelt, perhaps, at some length, on general neuroses and their causes, and may now turn to that which is our special object, viz., neuralgias of the trigeminal nerve. It starts from the side of the pons and has a small motor but a large sensory division. The former supplies the muscles of mastication, the tensors of the palate and tympanum, the myo hyoid and the anterior belly of the digastric nerve. Its sensory division runs to the Gasserian ganglion and passes out as the great sensory nerve of the face and head. The motor fibres arise from the nuclei in the upper part of the floor of the fourth ventricle, but some fibres are from the pons and mid brain. This is the superior nucleus. The sensory fibres arise from the cells of the Gasserian ganglion. One branch of each passes to the periphery in the skin of the head and face and the other grows centralwards. On reaching the pons its branches bifurcate authorizing around the principal sensory nucleus of the 5th, which has lateral branches to the motor nucleus, while the descending branches go down to the bulb where they form the descending root of the 5th, and some reach down to the spinal cord as far as the 2nd cervical nerve. Such are the origin and distribution of this great nerve which is liable to become the source of such trouble, which may have its origin either in the central brain area, in the ganglion or in some one or more peripheral branches. In the facial area pain is referred commonly to the 2nd division supplying the upper jaw and cheek, upper lip and side of nose or to the 3rd division in the lower jaw, lower lip and side of tongue. Often both are affected at the same time and pain will cease only partially, if only one division is treated. Sometimes the 1st division or supre orbital is attacked but not often alone.

Now perhaps, as is to be expected, any interruption of the conduction of afferent sensations along these branches of the 5th nerve will give instant relief from pain, and proves that the neuralgia is dependent upon stimuli-affecting peripheral nerve endings. So permanent destruction of the Gasserian ganglion means permanent anaesthesia of the whole area supplied by its branches. The peripheral neuralgia is doubtless in a large measure due to septic-poisoning of the dental nerve filaments from caries and pyorrhœa in which streptococci and other germs may be found. Dr. William Harris of St. Mary's Hospital, London, points out that many neuralgia have begun immediately after dental operations or abscesses of the antrum. No other nerve of the body is so liable to chronic infection, and often after years the infection which was thus introduced and had become dormant returns when it has passed into the nerve filaments within the jaw. The neuralgia may become worse after the removal of a tooth than before. The cases in men are two to one in women, and those of the right face as two to one of the left. Amongst other special causes are a chill in the face, and intense emotions, or again the cause is due to a blow on the face. Sometimes it is intense and paroxysmal as that described by Dr. John Locke in 1677, in the case of Lady Northumberland. "When the fit came there was as it were a flash of fire all of a sudden shot into those parts and at every one of those twitches, which made her shriek, her mouth was constantly drawn to the right side toward the right ear by repeated convulsive movements which were constantly accompanied by her cries. These violent fits terminated all of a sudden, except a dull pain ordinarily remained in her teeth and an uneasiness of that side of her tongue which she thought to be swollen, but which was not in any way altered though it seemed to have a scalding pain in all that half of her tongue. She had usually a precaution of the fit by throbbing in the upper jaw over against it." Dr. Harris tells of a case where six years before he saw her she had become suddenly affected in the night. After six years she got permanent relief by the injection of both 2nd and 3rd divisions with alcohol and finally the injection of the Gasserian ganglion made the cure complete. The onset is rare under 20 years. A few occur under 30 years. Almost never have the attacks disappeared spontaneously. Curiously, considerable intervals may elapse between attacks as in one case they returned after a period of three years. As may be supposed with the several influences which may end in an attack of *tic doloureux* it is difficult to ascribe to heredity any special influence, yet in over five hundred cases Dr. Harris specifically ascribed five cases to heredity. One case is where a father suffered for 25 years till seventy and then outlived the attacks, while his daughter suffered for 20 years until the inferior dental nerve was divided. One of her daughters again began to suffer at 36 with spasmodic neuralgia of the 3rd division. After treatment with drugs failed, Dr. Harris injected the nerve at the *foramen ovale* causing complete anasthesia and a complete cure of the pain. In other cases he records it was the mother of the patient who had suffered. One patient suffered two days and then had two teeth out but was no better, but subsequently the attacks seemed localized in the right side of her tongue. The pain in such cases has often been so great that until the methods of alcohol injection and removal of the Gasserian ganglion have been practiced suicide was often the end of this dreadful disease. The attacks if continued result through shock in rapid loss of strength owing to inability to take food properly and spasms are started by attempts at eating and talking. Of the drugs used gelseminum seems to be of greatest use where large doses of morphine have failed. It is probably true that as in other neuralgias the salicylates with organic bases will prove the most valuable, since they actually serve to increase the elimination of uric acid. In most cases a cold wind or draught are the occasions which start a neuralgia which is dormant but illustrative of its neurotic character, these patients curiously have no special immunity in hot weather. One patient of Dr. Harris had a premonition, like Lady Northumberland, like a burning sensation on the top of the head for some days before the neuralgic attacks commenced, while another always got a shivering sensation along the right cheek before the pain started. She had lost all her teeth twenty-seven years before the pain began. The pain at onset comes like an electric shock. One patient thought she had bitten on a needle and broken a tooth, some say it is like hot daggers or a hot knife being run into one, while in others it starts as a tapping sensation till the electric-like explosion takes place. In the high-pressure of life to-day, where a great drain is being put upon the nervous system, where high living is too often associated with rapid living, we have created conditions in which the nucleo-proteins of food are not only taken in excess, but the formation of uric acid and its side products is in excess, while their elimination through congested kidneys is often inadequate. The gouty diathesis is in evidence and a true anaphylaxis due to proteins of the purin type becomes established. These conditions are associated with cases where epilepsy may result, and while no albumen may be present in the urine or diacetic acid is produced in excess. The effects of persistent emotional shock are to interfere with the metabolism of the tissues and so acidosis may result. Dr. H. B. Shaw of the Staffordshire Mental Hospital points out that in fright and anxiety the mental stimuli pass to the splanchnic nerves and liver and result in acetone formation. Continued inflúences of this kind tend to exhaust the suprarenal glands, which are a protection against cell degeneration. An important fact is that stated by Dr. Shaw regarding the production of acetone from glucose by streptococci responsible for pyorrhœa alveolaris. The lessened use of fats and the increased use of carbohydrates with the administration of potassium citrate and other basis salts seem the direct means of lessening acidosis.

Such then is the resume of the many factors which underlie neuralgic attacks which have their climax in tic doloureux. What I have endeavored to make plain is that, like epilepsy, this disease seems to have almost a special pathology, but in every case it is a neurosis closely allied to those cerebral conditions intimately dependent upon disordered blood metabolism or the abnormal presence of some toxin as uric acid or acetone, due either to their excessive production in the tissues or to their defective elimination. Their permanent cure demands all the resources of the specialist and the hygienist. Perhaps the most we can say, however, is that a well ordered life from infancy in which diet, exercise and rest are normal, with educated control of the emotions and the pursuit of life with no undue draught upon vital energies, and the higher emotional nature, are here as well as in all other conditions the surest guarantee of a *sana mens* in *corpore sano* and the maintenance of what Sir W. Osler happily describes as ''equanimitas'' after the precepts of Epictetus the philosopher.

Dental Societies

SUMMARY OF TRANSACTIONS OF THE THIRTIETH ANNUAL CONVENTION OF THE NOVA SCOTIA DENTAL ASSOCIATION, SEPT. 16-17, 1920

The Thirtieth Annual Convention was held in Forrest Hall, Dalhousie University, Halifax. The first session was called to order on September 16th, 10.30 a.m. The president, Dr. G. R. Hennigar, being ill, Dr. F. W. Dobson occupied the chair.

The president's address was read by the secretary, Dr. W C. Oxner. It bristled with suggestions, as well as reviewed in a comprehensive way the work of the year.

The election of officers resulted as follows: President, Dr. M. K. Langille, Truro, N.S.; first vice-president, Dr. G. A. Chudleigh, Halifax; second vice-president, Dr. B. R. Coysh, Halifax; secretary, Dr. K. F. Woodbury, Halifax.

The officers, with the addition of Dr. W. H. H. Beckwith, comprise the executive committee.

Voted, that a dinner be held on Wednesday evening at the Tally Ho. The following persons were invited as guests: Dr. W. H. Hattie, Superintendent of Provincial Board of Health; Dr. B. F. Royer, Director of Massachusetts Halifax Health Commission; Drs. Craig and Dowell, Department of Public Health, Halifax; Dr. F. V. Woodbury, Organizer of the Provincial Health Caravan.

The following reports were read and adopted: Provincial Dental Board; Oral Hygiene, Education Committee; Dalhousie Dental School; Dominion Dental Council.

EXTRACTS FROM THE REPORT OF THE PROVINCIAL DENTAL BOARD.

One meeting of the board.

Eleven meetings of the executive committee.

The dental register shows 184 names on the roll.

Eight names added during the year.

Thirty-three names of students were placed on the register.

A bill introduced into the House of Assembly to repeal the legislation of last year was advocated vigorously by the board, but was defeated. This is much regretted.

The financial reports show a balance on hand at the end of the year of $1,245.

RECOMMENDATIONS.

It is recommended—

(1) That legal council be employed when considered necessary by the executive committee of the board.

(2) That the annual dues be $3.

(3) That the dental board be authorized to act for the Association between sessions on any matters connected with the Dominion Dental Council and the Canadian Dental Association.

(4) That the sum of $200 of the funds of the Association be placed at the disposal of the Faculty of Dentistry of Dalhousie University.

(5) That the sum of $25 be donated annually to the Faculty of Dentistry of Dalhousie University, to be known as the "Nova Scotia Dental Association Prize" for students of the third year.

(6) That the honorarium of the secretary registrar be $100 per year.

The second session convened at 2.30 p.m., Vice-President Dr. Chudleigh in the chair.

Papers were read as follows: "Dental Progress," Dean Woodbury; "Orthodontia," Dr. W. W. Woodbury; "Crown and Bridge Work, Past and Present," Dr. W. C. Oxner; "Oral Hygiene, Health Caravan," Dr. G. K. Thomson.

A motion of sympathy for the president, who was ill, was passed.

The evening banquet was one long to be remembered. The medical and dental men who had spent six weeks last summer on the great health caravans reported their work. It showed the far vision of those inaugurating it and made evident, as no other agency could, the terrible need of public medical and dental service throughout the rural sections. Much that was amusing was also recounted. Dr. W. H. Hattie, Superintendent of Provincial Public Health, made a telling address in which he outlined the plans of the Government in the establishment of county health centres, with each of which he hoped to see dental clinics established. Dr. B. F. Royer, Director of the Massachusetts Halifax Health Commission, gave a most interesting outline of the proposed activities of the city health centres. A dental clinic for pre-school age children is already being established in connection with health centre No. 1. Good music was discoursed at intervals under the direction of Dr. W. H. H. Beckwith.

The third session opened September 17th at 10.30 a.m., Dr. F. W. Dobson in the chair. Dr. Chudleigh presented a report on the president's address.

Dr. W. H. Hattie, Superintendent of the Provincial Board of Health, gave a most interesting address on the plans of the Provincial Board of Health, and asked the co-operation of the Association.

Dr. G. K. Thomson, in moving a vote of appreciation of the visit of Dr. Hattie to our meeting, suggested that after all the dental profession had done in bringing free dentistry to the public, official recognition should be accorded by the Government on the Health Commission. Dr. Hattie, in reply, stated that he would welcome such an appointment.

A paper was read by Dr. W. C. Oxner, subject: "The Present Status of Fixed Bridge Work." Much discussion was provoked by this paper.

Voted, that this Association will be glad to co-operate with the Faculty of Dentistry of Dalhousie University, to hold a post-graduate course in Halifax during the summer of 1921 at the time of the annual convention, and that the Halifax Dental Society be asked to co-operate.

That a questionnaire be sent out as soon as possible to ascertain what subject or subjects would be the most profitable to study in such a school.

Also voted that any extra expenditure in connection with this school be met from the funds of the Association.

Session adjourned.

SUMMARY OF THE ACTIVITIES OF THE PROVINCIAL ORAL HYGIENE COMMITTEE.

A course of lectures on oral hygiene were given before the students of the Provincial Normal School in 1918. In 1919 the course was officially added to the curriculum. In Sydney, New Glasgow, Truro and Windsor, excellent work is being carried on by the local dentists. School clinics are increasing.

A course of lectures on oral hygiene have been added to the course given for public health nurses which is conducted in Dalhousie.

A lecture was given before the annual meeting of the Nova Scotia Public School Teachers' Institute by Dr. Ralph H. Woodbury.

Drs. Ryan, Ritchie, Finigan, Roach, Stevens, were the dental representatives on the rural health caravans which covered practically the whole province.

In Halifax the provincial committee is acting in an advisory way for the establishment of pre-school clinics in connection with the Massachusetts Halifax Health Commission. This is said to be the first clinic of its kind established on this continent which undertakes to systematically reach and instruct the prospective mothers and care for the children, dentally and every other way, from birth to six years of age. It is hoped that this may shed some light upon the problem of the prevention of dental caries.

Recommendations adopted:

(1) That the members of the Association co-operate with the provincial committee in the establishment of preschool as well as school age clinics throughout the province, and wherever possible committees of local dentists be formed for this purpose.

(2) That this Association grant the sum of $100 for expenses in connection with the provincial oral hygiene propaganda.

(3) That the attention of the Government be directed to the desirability of the appointment of public health dentists as soon as possible.

These recommendations were all passed.

REPORT OF DEAN OF FACULTY OF DENTISTRY, DALHOUSIE UNIVERSITY.

Dean Woodbury reported that the affairs of the Dental School of Dalhousie are in a most satisfactory condition. Each year is showing an increased attendance. The Infirmary is equipped with the latest type of Ideal Columbia and S. S. White Diamond chairs. Each third and fourth year student is assigned to a separate chair.

A new and complete dental X-ray apparatus has been installed for use in the Infirmary. The Infirmary clinic is abundant and of superior quality. The request of the City School Board to care for a limited number of school children is accepted as an opportunity to systematically train the students in the methods of preventive dentistry.

The formation of the Dental Faculties' Association of Canada was outlined, and their action respecting dental education in Canada described.

A description was given of the proposed Health Centre and Out Patient Hospital which is to be built by Dalhousie next summer, and which will contain a dental section as well as medical service, which will provide all sorts of oral and dental lesions for the observation of the students of the Dental School. A strong plea was made that Canada educate its women as qualified dentists prepared for the work of school and public clinics as well as private practice, instead of turning a multitude of half educated and untrained persons called oral hygienists on the public, who will be under constant temptation to break the laws of the land and impose upon the public. It can only result in degrading the dignity of the dental profession.

The representative of Nova Scotia to the Dominion Dental Council reported the action of that body at the Ottawa meeting in August last. The transactions have been already published in the Journals.

Reported by Frank Woodbury.
Halifax, Oct. 1st, 1920.

ALUMNI SOCIETY OF THE DEWEY SCHOOL OF ORTHODONTIA

The next annual meeting of this society will be held on April 25th and 26th at the Hotel Ambassador in Atlantic City. The usual high standard of the meetings of this society will be maintained. Clinics and evening sessions will be included in the program. All interested in Orthodontia are cordially invited to attend these meetings.

George F. Burke, Secretary,
741-43 David Whitney Bldg., Detroit, Mich.

KENTUCKY STATE DENTAL ASSOCIATION

The next annual meeting of the Kentucky State Dental Association will be held in Louisville, Ky., April 13, 14, 16, 1921, Seelbach Hotel as headquarters. A clinical program of unusual interest is being arranged.

Address all correspondence to W. M. Randall, Secretary, Louisville, Ky.

Editorial

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CONSULTATION NOT CO-OPERATION

For many, many years the physician has been asking for closer co-operation with the dentist. The dentist acquiesces and as a rule the matter ends right there. No physician would think he had been courteous to his dental friends in meeting if he did not mention the importance of dentistry and the desirability of closer co-operation. This is all very nice, but will someone get right down to brass tacks and tell both the dentist and the physician what is meant by closer co-operation. Some interests say with a good deal of flourish that they do not decide the dental treatment—they send their patients to a dentist for that. Others will determine what treatment is to be followed and direct the patient to his exodontist friend for full extraction. Or he sends the patient to the family dentist who takes an X-ray picture and sends the patient and the picture to the exodontist for diagnosis and treatment. The only idea of co-operation is for the dentist to extract the teeth indicated on a chart or be disliked. The dentist who even hints to the physician or dentist that sends him a patient for treatment that the diagnosis is wrong is pretty sure not to get another case from him. Of what value to the patient is this kind of co-operation? There is no consultation. One decides what the other should do in the one case, and in the other each decides what should be done without a discussion together of the problems to be met.

Unfortunately too few dentists take into consideration the physical condition of the patient in determining what dental operations are to be performed. Still worse it is safe to say that not one physician in a thousand ever dreams of sending a case history with the patient to the dentist. As if that which the dentist was expected to do for the patient was outside of the human organism and yet by some ocultism would correct a general ailment. The general physician does not as a rule show the dentist his physical finding nor discuss with him his patients' diseases. If he would express it in words he would say he called the dentist in to decide what should be done with his patient's teeth but not to talk about his patient's nephritis or anæmia. Dental operations which are to be of any value in the treatment of nephritis or anæmia must be based upon a broader foundation than that of restoring lost tissue or the extraction of teeth. It is the physical condition of the patient which determines the kind of dental operation to be performed. No sensible person would ask the bed-ridden tuberculous patient to submit to extensive dental operations. The extent and the gravity of the disease from which the patient is suffering are determining factors in the character of dental operations to be performed. The physician who knows his patient is suffering from syphilis and does not let the consulting dentist know of it is not playing fair with either his patient or the dentist.

The only kind of co-operation between the physician and the dentist which is of value to the patient is a frank exchange of views concerning the patient's ailments. Each stating his findings and giving heed to the other's views, keeping in mind that the internist has the responsibility of the patient's life on his hands and that the treatment must be commensurate with the gravity of the case. Patients need not loose all their teeth because they have a pain in the elbow no more than they should lose a foot because of a corn on the toe. Patients with the same dental lesions do not necessarily require the same dental treatment. Other factors make the difference.

Editorial Notes

A free dental clinic is being managed by the local dentists in the city of Sydney, N.S., whose equipment has been supplied by the city for the school children. Much good has already been done, the dentists giving their services gratis.

⁂

At a meeting of the Board of Education on Dec. 3rd Trustee Mrs. Wright presented a comprehensive statement of the system used in London schools which had been perfected by months of study. It is hoped that the board will accept this and make its use provincial.

⁂

An unusual sale of a motor truck has just come to light. The Scranton distributor of the Bethlehem Motors Corporation recently sold a Model K chassis to the city of Scranton. This chassis is being equipped with a special body which will be provided with a dental chair, instrument cabinet, running water, and all of the sanitary conveniences of a first-class dental office. The traveling dentist will visit all of the schools of the city, traveling constantly. A campaign promoted to show the value of oral hygiene will go on throughout the year. After examinations of the scholars, those in need of important dental work will be taken out of the school and to the truck where expert work will be done. The pupil will then return to the classes.

⁂

The first class in military dentistry ever held in the United States was conducted in the Dental College of St. Louis University by Major Robert W. Kerr, U.S. Medical Corps. Major Kerr explained to the 171 sophomores and freshmen who constitute the R.O.T.C. of St. Louis "U." that while similar classes would be established in nine other class "A" dental schools of the United States, the St. Louis University unit is the only one now fully organized.

According to Major Kerr, the courses will take four years, including plastic surgery and the treatment of gunshot wounds of the jaw and face. At the conclusion of the course each graduate of the St. Louis University College of Dentistry will receive a commission as a 1st Lieutenant in the Dental Reserve Corps of the United States Army, and all regular officers of the Dental Corps will in future be drawn from this reserve.

Review

Porcelain Dental Restorations with a Chapter on Gold Inlays. By William A. Capon, Assistant Professor of Dental Ceramics, University of Pennsylvania. Illustrated with 294 engravings. Published by Lea & Febiger, Philadelphia and New York, 1920. Price, $3.25.

It is some time since the reviewer of this book of 220 pages has come across a more modest and comprehensive statement of the facts about porcelain in dentistry. How refreshing to read in this volume that C. H. Laud, of Detroit, really introduced almost all the advances in this important field of dental practice. For years porcelain artists have lectured, demonstrated and written as if Laud did not exist. Few have acknowledged his right to have his name associated with the subject. In fact, other names have been associated with his inventions.

Dr. Capon's book on porcelain comes at a very opportune time. The profession is just in the mood to return to porcelain having found the shortcomings of the silicates for artistic restorations. The illustrations are excellent and the descriptions of operations are simple, clear and direct. Every step in porcelain inlays is carefully described. It is like reading about old friends to go through the details of the different jacket crowns, the baked crown, the porcelain bridge, and colors in oil. The only old friend lost is the continuous gum denture.

HOW WE ENJOY A SATURDAY AFTERNOON IN ALBERTA.
Seventy-two ducks for two hours' shooting for Bob Decker and Mort McIntyre, within one hours' motor ride from Edmonton.

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Original Communications

THE DUAL RESPONSIBILITY OF PHYSICIAN AND DENTAL SURGEON IN CASES OF DENTAL FOCAL INFECTION

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Read before the Montreal Dental Club, December 3, 1920.

When the invitation of the Montreal Dental Club to read a paper was accorded me, I immediately knew what I was going to discuss. But I was by no means sure of how I could make this hobby of mine interesting to the Montreal dental surgeons, nor how my paper could steer a course of safety between the monotonous daily routine of mouth infections with which you have so much to do, and the, to you, uninteresting systemic conditions that fall entirely in the domain of the physician and surgeon.

When I accepted the honor your Secretary tendered me I felt I must thank you for it, and at the same time request you would accord my talk the same tender kindliness as you give those fearful souls who come to you for "painless dentistry."

In connecting up the results of focal infection as we meet it, with oral sepsis as you meet it, I intend to divide my talk into three divisions. First comes the necessary relation between dentists and practitioners. The main part of the paper is concerned with cases from my personal private files of dental focal infection. Then I shall close with a few lantern slides showing pathological conditions of bone and teeth. I have to acknowledge my thanks to Dr. Thornton, Dean of the McGill Dental Faculty, and to Dr. W. A. Wilkins, Director of the Montreal General Hospital X-ray Department, for slides and assistance and advice.

Specialization is at its zenith to-day. In Medicine, Surgery and Dentistry specialized men serve the public. Unfortunately often the public suffers because of over-specialization. The general practitioner in medicine and in dentistry used to serve the patient in all departments, now the patient is sent hither and yon for a tinkering here and a touching up there. When he is through—if ever—he may be a jig-saw puzzle.

One defect alone may spoil the work of specialists each the best in his line, that of lack of co-operation. A surgeon referred in a recent paper (1) to "one of those non-co-operative dentists." We all meet them. Our cases with systemic diseases or with lesions in organs remote from the oral cavity we refer to our dental colleagues for correction of oral sepsis. Our dental friend refers them to a hospital roentenologist and eventually does what work the dental surgeon deems best.

The clinical findings of the internist, those of the dental surgeon, those of the roentenologist are interpreted by the other man, often are disregarded by the other man.

The patient pays for three services, he gets only that of the last man consulted, but he is entitled to the combined services of all three. Consultation, co-operation, interpretation of special examination results by the one who is best fitted to interpret them, should be his due.

When a patient's physician calls in a surgeon for consultation the patient secures the results of the combined examination, the skill and the knowledge of both, and he acquires the opinion of both, though not necessarily agreeing. When a physician *sends* him to a dental surgeon should he not have equal service?

Dental surgery is to-day a definite special branch—as far as the patient is concerned—of general medicine. It is becoming highly specialized in its branches and its representatives are rapidly securing prominence and position which should accord them the prestige, privilege and ethical courtesies enjoyed by other specialists in general medicine.

The obstetrician requires the dental specialist for his cases of pregnancy; the orthopædic surgeon, the physician, the surgeon, the aurist and the laryngologist all require his co-operation. For the service of the public, for whom all work, there should be in general medical practice a closer co-operative service. The physician should meet the dental surgeon with the patient in consultation, and the latter will be the gainer.

The surgeon and the roentenologist consult over the X-rays of the former's cases, and the roentenologist's opinion is always valuable. The dental surgeon should conduct his services to the patient, when based on X-ray findings, on combined knowledge, his own and the roentenologist's.

Focal infection, originating so often in oral sepsis, in a high percentage of cases from defective teeth, is of generalized importance. Thoma (3) found in chronic medical cases alveolar abscess in 88 per cent. of his cases. The inference is obvious. The dental surgeon is necessary and his work most essential to both the patient and his medical attendant. The latter must necessarily be the starter in the relay race for the patient's health, but he should hand on to the dental surgeon his clinical findings, and with him co-operate in the mouth surgery that may be needed.

The roentenologist, if early consulted, will surely prevent many of the unfortunate late sequalæ of dental decay, osteomyelitis, suppurative adenitis, septicæmia, and even death.

Practically every hospital now has its resident dentist and its dental department for indoor and outdoor patients.

The dental department in a general hospital has a wide scope of service, and no hospital is complete without one. The clinician who worked in a hospital before the acquisition of a dental department is better qualified to estimate its value than any one else. The before and after are so different.

The scope of this department may be divided into

(a) Indoor or ward work.

(b) Outdoor or dispensary service.

INDOOR OR WARD SERVICE.

This may be again divided into (1) for private patients, (2) for public cases.

(1) *Our private patients* should be entitled to the best services available while undergoing hospital treatment, and it is to be conceded that a resident or attending dental surgeon is as necessary as a masseur or an operator of an electrocardiograph.

If the patient requires dental services in the hospital, the hospital must furnish the dentist or it has no control of the work done in the hospital. As a member of the staff, the dentist is amenable to hospital qualifications and hospital standards. The private patient may have been admitted for a fracture of the lower jaw, and his attendant surgeon, in an up-to-date hospital, has available the services of a dental confrere for advice and assistance, and dental appliances in the correction and control of the lesion. Such services should be, and are, available on a consultation basis as with any of the other hospital specialists.

The various conditions in which services of the attending hospital dentist are required are too numerous for consideration at present. They include acute conditions, as toothache, extraction of teeth in facial and jaw injuries, control of jaw fractures, removal of sources of dental sepsis prior to operative work where anæsthetics may result in respiratory infections, as septic pneumonia. The surgeon operating on stomach cases appreciates and requires prior to operation the services of the dentist even in private cases where many come from out of town and arrive with foul mouths. For private cases the hospital dentist should function as a consulting specialist, and his work should form part of that recorded in the patient's case report, and his fee should be in accordance with the special services rendered.

(2) All public cases are in need of dental services. All cannot in the hospital receive them, but many cases should be given the advantage of emergency treatment while in the ward, and on their discharge should be referred to the outdoor dental department. In ward cases in hospital for a long time the hospital dentist can do even considerable dentistry, take impressions, fit dentures, and the patient may be discharged many days earlier because of his ability to convalesce quicker by reason thereof. The dental department can cut down the length of hospital stay and be thus an economical asset to the hospital indoor service.

With a hospital dental service, resident or full time attending, economy in anæsthesia and operating room service is possible. Combined operations and extractions may be done at one sitting. It will save the patient danger, suffering and disability. It will save the hospital anæsthetist's time, operating room staff's time, and the cost of extra hospital days.

OUTDOOR OR DISPENSARY SERVICE.

At the Montreal General Hospital the various departments are correlated by a "refer" and "transfer" system whereby the patient's outdoor card has attached to it the cards for all clinics which he attends. The clinical findings, diagnosis and treatment in any one department always goes with the patient to all departments or clinics at which he is attending. This applies to the dental outdoor department, which is on a par with all other departments, inasmuch as it treats (a) cases coming to it alone, (b) all cases "transferred" to it from other clinics, (c) examines and reports upon all cases "referred'' to it for opinion or advice, and (d) refers or transfers to other clinics cases which require service there.

The interchanging of such opinions and clinical findings by *written records* ensures a most efficient service for the outdoor patient.

The outdoor department of any large hospital, especially the surgical clinic, are filled with cases requiring dental attention.

For cases of cervical adenitis due to dental decay the prompt attention of a dentist on the same day that the patient first comes to an outdoor surgical clinic may save a pretty girl from a most disfiguring cervical scar. The outdoor surgeon is particularly keen to have available the X-rays of teeth in bone disease of the jaws, and requires in a large percentage of cases the services of the outdoor dental department.

The patient who has a foul mouth is a poor subject for mercurial treatment for syphilis, and the association of a dental outdoor department with the genito-urinary department tends to prompt and effective anti-syphilitic treatment.

The outdoor physician with gastric cases finds the dental department aids in improving the ability of his patients to masticate and digest their food.

Our all day dental service is of the greatest benefit to the outpatient department of our hospital. In hospital management it is now recognized that the hospital dentist is a qualified staff member, and in the Montreal General Hospital he occupies a seat on the outdoor board on a par with the rest of the outdoor staff.

All medical schools of the first rank have a dental faculty where the dental students have the advantage of general medical and surgical teaching. In some faculties of dentistry (McGill) the student has the advantage of a course in oral surgery by the surgical clinical teachers of the medical school. He has also the advantage of lectures or clinics in special branches, as for example, oral syphilis. I would go further and advise that our medical students should have courses in dental pathology given them by teachers in the associated faculty of dentistry of their own school. They would be better fitted to care for their patients, and their knowledge of the importance of dental or oral sepsis would undoubtedly result in more effective service to their patients.

Such co-operative courses for students in medicine and dentistry would increase the co-operation in practice between the medical attendant and the dental surgeon, and this is certainly greatly to be desired.

THE TEETH AS FOCI OF INFECTION. (4)

Leenwenhoek, of Delft, Holland, a lens grinder, perfected a lens through which he discovered bacteria and saw motility. In 1683 he discovered in the *tartar scraped from between the teeth* a form of micro-organism, a contribution on which (with excellent descriptions and illustrations) was presented by him to the Royal Society of London on September 14th, 1683.

In 1762 Marcus Antonius Plenciz, of Vienna, confirmed the above and attributed to them the cause of infectious diseases; he claimed they were *living* substances and that each disease had its own germ as each cereal could produce but one kind of grain.

It was well on to 1860 before bacteria were recognized as likely to cause systemic disease, and not till 1881 did Koch conclusively establish their aetiology factor in disease.

Wonderful, therefore, and far in advance of the times, is the following case report taken from Dr. Benjamin Rush's "Medical Inquiries and Observations," entitled "An Account of the Cure of Several Diseases by the Extraction of Decayed Teeth": "Some time in the month of October, 1801, I attended Miss A. C., with a rheumatism in her hip joint, which yielded for a while to the several remedies for that disease. In the month of November it returned, accompanied with severe toothache. Suspecting that the rheumatic affection was excited by the pain in her tooth, which was decayed, I directed it to be extracted. The rheumatism immediately left her hip and she recovered in a few days. I cannot help thinking that our success in the treatment of all chronic diseases would be very much promoted by directing our inquiries into the state of the teeth in sick people, and by advising their extraction in every case in which they are decayed. *It is not necessary that they should be attended with pain,* in order to produce diseases, for splinters, tumors, and other irritants before mentioned often bring on disease and death, when they give no pain and are unsuspected as causes of them."

The bacterial flora of the mouth we now know is abundant, and the streptococcus, pneumococcus, endamoeba, the fusiform bacillus, the dipheroid organisms, etc., are all concerned at times in the production of systemic disease.

It is too big a subject to discuss all the possibilities of disease subsequent to dental and peridental infection, but certain statements may be made and accepted.

Dental focal infections are very common, more so now than years ago, and because of the progress of dental science. This paradox is explained by the increase in so-called conservative dentistry. Aching, decayed, dead or infected teeth were formerly extracted. During the last twenty years, especially in city dwellers, these teeth are preserved(?) to the patient by treatment filling the root canals and covering them up with gold crowns. "Uneasy lies the tooth that wears a crown."

The most dangerous varieties of dental sepsis are pulpless teeth and blind abscesses. Such infection must necessarily be carried into the circulation, vascular or lymphatic. The constant biting on such teeth acts as a kind of pump and the abscess at the root is regularly pumped three times daily at least, into the system. Their frequency is beyond dispute. At the Forsythe Dental Infirmary, 40,000 abscessed teeth were found in 50,000 children examined. (2) Langstroth found at the University of California Hospital sources of chronic infection in 84 per cent. ulcer cases, in 66 per cent. of subacute arthritis, in 73 per cent. of chronic arthritis, and in 100 per cent. of gall-bladder cases.

Granted the possibility of dental sepsis, the examination must be complete and thorough. X-rays of all doubtful and suspected teeth is good, X-rays of all teeth is better. It has been established that embolic infection of the root tips of previously healthy teeth may occur, as well as infection of these by extension from neighboring diseased teeth. The remote lesions and diseases that are secondary to such dental foci are numerous and widespread and embrace almost all organs susceptible to the results of focal infection anywhere in the body. I intend only to quote one or two examples from my own cases.

PHLEBITIS.

Phlebitis is, of course, an infective, metastatic condition. The focus of infection can at times never be established. In others the apparent focus is dental infection, and its removal cures the phlebitis, or at least prevents recurrent attacks.

Case No. 787, A. R. G., male, aged about forty-five years, first consulted me in 1913 for arthritis of his left hip. This he had for many years, at one time it was considered to be tuberculosis. In April, 1914, he had neuritis of the right external popliteal nerve. In September, 1917, he developed a very acute phlebitis of the left external saphenous vein and was in the Montreal General Hospital. He had a pulmonary embolism there from which he recovered. Later he showed definite symptoms of myocarditis and was a long time getting well. His teeth showed a bad condition of many of them with pyorrhœa, and X-rays showed defects in nearly all teeth with areas of rarefaction. In November he had eight teeth extracted under a local anæsthetic, which was followed by a chill and a rise of temperature to 101 deg. with rapid heart action and praecordial distress. His pulse was again intermittent and rapid. Each time more teeth were extracted a similar reaction occurred.

Such acute reaction is seen at times when the surgeon opens up areas of chronically diseased bone, where prior to operation no temperature or generalized symptoms existed. Such flare-ups may even prove fatal, and where many teeth are to be extracted only a few should be attempted at the first sitting. Billings reports a fatal case in a girl of eighteen years who developed streptococcus bacteræmia with acute hæmorrhagic myositis, pleuritis, pericarditis, myocarditis and death following extraction of many teeth with curetting of the alveolar abscesses.

Case No. 1716, M. R., male, at fifty-two years of age developed a severe phlebitis in the veins of the left leg and thigh, in November, 1917. He had an exceedingly foul mouth with pus exuding at several places and the foci of infection was self-evident. He was referred for dental treatment and has had no further phlebitis.

Case No. 1309, E. S., a female aged thirty-two years, in April, 1916, reported that during the last two years she had had many attacks of "indigestion," often with nausea, vomiting and dizziness. In May, 1918, she had two attacks of dizziness, faintness and vomiting, and in July and October had several more. On several occasions she was prostrated and had to go home from her office in a cab. General examination revealed no evidence of cholecystitis, gastric ulcer, or appendicitis. X-rays of the stomach were negative in November, 1918. These attacks recurred at intervals, and in April, 1919, she was so ill that a most careful general examination was made. Her fear of these apparently causeless, sudden, disabling attacks of intense vertigo, nausea and vomiting was interfering with her work. The teeth showed soft gums at edges of several gold crowns and there were thickened areas of gum infiltration in places. X-rays, May, 1919, showed one root embedded and covered by smooth gum under some fixed bridge work and rarefaction at several places. The permanent bridge work was removed, the diseased teeth extracted, and all her teeth cared for carefully. She has not had any of the above attacks since. They were undoubtedly due to absorption from these peridental foci.

Several patients have exhibited the common arthritic symptoms, some in severe degree and rendering them in one case at least a chair-ridden invalid. This was a physician's wife, seen in Murray Bay years ago, when a peridental abscess due to the streptococcus veridans led to a most virulent condition of polyarthritis, and in spite of vaccines and all remedial measures she had lost the use of her lower limbs, and had partial fixation of almost all her joints.

Severe headache, as in Case No. 1610, a female aged thirty-seven years, was due to dental infection and resisted all treatment till the teeth were extracted. One other patient, Case No. 32, a female aged thirty-nine years, developed secondary anæmia and a myocarditis, from which she was for months confined to one flat, though her apparent dental trouble ceased with the extraction of three teeth early in 1919.

Hodgkin's disease is a fatal malady, and there are many observers who believe it is caused by a definite diphtheroid organism, found in the lymph nodes, in the blood, and in focal lesions of the mouth in patients who have Hodgkin's disease. The diphtheroid organisms found in the mouth may cause other distant lesions as well.

Case No. 1214, a male aged about forty years, consulted me October 9th, 1919, for an acute right sided epididymitis, not of urethral origin. The onset of it was preceded for a week or so by an increase in the amount of the pus expressed from alongside one of his lower molar teeth on the right side. At that time his cervical glands were enlarged and tender. In the spring of 1919 he was sent by me to his dentist because of obvious dental trouble. He had several teeth extracted, had the emetine treatment for pyorrhœa, and gained eight or ten pounds during the summer. The swelling of the epididymis increased in spite of rest in bed, and the application of an icebag locally. He had a temperature of 102 deg. He was admitted to the Montreal General Hospital and the abscess was evacuated under gas anæsthesia, October 15th. Dr. Rhea reported "B-19-819 cultures from purulent material from epididymis brought to laboratory by Dr. Henry on October 15th, 1919. Cultures made at once on dextrose agar and hydrocele dextrose agar. From each media a good growth of bacterium in pure culture. This organism has been cultured on various media and conforms to the diphtheroid group."

The following day his teeth were X-rayed and a large abscess was seen about the left lower last remaining molar, and various other teeth, five in number, were seriously involved. These were removed two days later, and cultures were taken from some of the roots and from the socket of the above molar. The bacteriological report was "S-19-837, swab from tooth, October 18th, 1919. Cultures as above were made from tooth but no diphtheroids were recovered. This organism was, however, seen in the direct smear." He was treated with autogenous vaccine and quickly improved and gained nearly twenty pounds. Examination on several occasions, physically and bacteriologically, showed no evidence of gonorrhœa.

In pregnant females there is an extra demand on the mother for lime salts by the fœtus, whose bones require calcium in large amounts. (Calcium salts form 66 to 67 per cent. of bone). In these women the presence of apical dental abscesses are particularly prone to cause trouble. Talbot has shown in a large series of cases that chronic dental sepsis with acute activity of the pus pockets preceded toxæmic symptoms of the terminal stage of pregnancy. In one case post partum convulsions with breast abscess and pyelitis, two pus pockets about teeth were shown by X-ray, though no local tenderness or other local symptoms of dental sepsis was present. The toxæmia of pregnancy pre-supposes a chronic sepsis inhibiting kidney elimination and should call for dental and tonsillar inspection, and treatment if infection is found. Albuminuria is in certain cases cleared up by the removal of sources of dental sepsis.

I have seen acute hæmorrhagic nephritis, recurring attacks, associated with absorption from a local streptococcus infection of bone, the existence of which was only discovered when I examined the patient in consultation.

Conditions of hypertension are at times apparently incidental to dental sepsis. The blood pressure falls after the correction and elimination of foci in the mouth.

By no means can it be advised to have wholesale extractions carried out. A careful clinical examination is made by the physician to eliminate other sources of infection, and the dental surgeon, with all his available means of diagnosis, should concur in the necessity for the extraction of only those teeth about which there can be no doubt. The X-rays are only one part of the patient's examination.

Before demonstrating the lantern slides, I would like to say a word about the pathology of bone disease, and about X-ray interpretation. The somewhat casual and common method of getting a patient photographed with X-rays by any one who has a machine is just as valuable as an examination of a chest by any one with, as his sole qualification, the possession of a stethoscope. Three years ago I had a case of dislocation of the elbow. I reduced it under an anæsthetic, and some weeks later was informed an X-ray had been taken and "three fractures of the elbow were found." I hadn't made them out. On repairing to the office of the man with the X-ray machine, the plate, a poor one, was shown me, exhibiting the three un-united fractured portions! These were the normally un-united epiphyses of a boy of fourteen years, and I had the pleasure of making the "expert" turn up his Gray's "Anatomy," verify this, and of hearing him 'phone the boy's parents to correct his diagnosis.

We only "see the things we are taught to see." Things we do not look for we will never see.

X-rays of bone show (1) *altering degrees of density* of bone. These vary with the calcification present. This is decreased in inflammation where absorption or rarefaction occurs. It is increased in chronic inflammation, about acute lesions where the inflammation is arrested or fenced in. Then increased density is shown by heavier shadows, often longitudinally placed along the area involved. Again, the normal shadow may be entirely replaced by new growth or where an abscess has destroyed the bone.

When the frequently used expression "the X-ray does not show anything" is heard it is often because the X-ray reader does not see.

A decrease in density due to absorption occurs quite early, the increased density due to deposition of mineral matter is slower. Often X-rays show in united firm fractures little or no callus—because as yet the calcification of the callus is slight. It may be delayed for months, the average normal time for callus in cases of fracture to show is three to eight weeks.

X-rays show (2) *alteration of contour*. This is pathological and is seen in acute and chronic bone diseases and in new growths.

Alteration of contour in dental plates must not be confused with distortion of the tooth or bone from the necessarily improper placing of the film in some cases. Such pictures differ from those in surgery where plates or films are always in one plane during exposure.

Dental and peridental bone disease is often first recognized by the X-ray showing the mineralization of the swollen periosteum or pericementum. This *always* indicates *bone* involvment, even though it does not show in the X-ray. Any one can diagnose the gross X-ray readings of bone abscess or sequestrum formation. Here the *ragged appearance of the bone* edges or ends, or in dental films, the sockets of the teeth in the alveolus, are clearly shown and indicate advanced bone destruction and decay.

Clear areas around the roots of teeth are by no means always abscess cavities, are seldom pus filled spaces, but are areas of bone absorption and are infected, and often infecting areas. The clear area about an unerupted tooth is clearly outlined and is so shapely it seldom can be mistaken for the clear space of infection which *gradually shades* off into normal bone about it.

Dental films rarely show malignant bone conditions. Here we have alteration in density, alteration in contour, and besides we find several co-existing conditions in the same area, namely, much ossification accompanied by a breaking down process and resulting in a "spotty condition of the bone."

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(1) John E. Talbot, "Surgery, Gynecology and Obstetrics." February, 1919. Page 165.

(2) P. R. Howe, "Dental Cosmos, LXI, 1919." Page 33.

(3) K. H. Thoma, "Dental Items of Interest, XXXIX, 1917." Page 516.

(4) C. K. P. Henry, "Canadian Medical Association Journal," July, 1920. Page 593.

THE PROS AND CONS OF FIXED BRIDGE WORK

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If one may judge from the published reports of recent meetings at which the relative merits of fixed and removable bridge work were discussed, the conclusion would inevitably be reached, that a state of war still exists; that there is no immediate prospect of a peace treaty being signed; that the millennium is still a long way off, and that if the lion and the lamb are soon to lie down together, one is likely to be inside the other.

Will you permit me, at the very beginning of this paper to say, that I am not a "dyed in the wool" partisan of either group, while at the same time I have some opinions, fairly well grounded, and I believe, founded on a somewhat extensive opportunity for observation. As you are all aware, one of the world's greatest medical men, Sir Wm. Osler, died at Oxford a few months ago. He was, without doubt, the most famous graduate of McGill University's Medical School. Not only in Canada but in the United States, in Great Britain, in every civilized country in the world, his claim to greatness as a medical man and a teacher, is fully recognized.

On what foundation does that recognition of greatness most fully rest? On any great discovery, such as those credited to Lister, Koch or Pasteur? No. On any marvellous advance in surgical technic? No. Sir Wm. Osler was great because of his passion for truth, and the eternal principles of which truth is always the bed rock foundation. Every paper mentioning his death, spoke of his "wonderful power of diagnoses." Just what does that mean? This: that he sought the "cause" before attempting to treat the consequences. From one of the newspaper references to his life work, let me quote a single paragraph:

"SOLIDARITY OF MEDICINE.

"Of no other profession is the word 'universal' applicable in the same sense. The celebrated phrase used of the Catholic Church is in truth much more appropriate when applied to medicine. It is not the prevalence of disease or the existence everywhere of special groups of men to treat it that betokens this solidarity, but it is the identity throughout the civilized world of our ambitions, our methods and our work.

To wrest from nature the secrets which have perplexed philosophers in all ages, to track to their sources, the causes of disease, to correlate the vast stores of knowledge, that they may be quickly available, for the prevention and cure of disease—these are our ambitions. To carefully observe the phenomena of life in all its phases, normal and perverted, to make perfect that most difficult of all arts, the art of observation, to call to aid the science of experimentation, to cultivate the reasoning faculty, so as to be able to know the true from the false—these are our methods. To prevent disease, to relieve suffering and to heal the sick—this is our work. The profession in truth is a sort of guild or brotherhood, any member of which can take up his calling in any part of the world and find brethren whose language and methods and whose aims and ways are identical with his own."

If this be true of medicine, is it not equally true of dentistry? There is no one method of treatment, no one method of restoration that in all cases, and under all circumstances is always right, and all other methods always wrong. But there is, there must be for every individual case, a best method, when all the circumstances are considered, and it is your business and my business to find out the truth about that method, and having found the truth, base the treatment or restoration on that knowledge.

Will you permit me to quote one sentence, not perhaps relevant to the subject under discussion, but which shows the enlarged vision of a great man, and suggests a line of action which the dentists of this continent might profitably lay to heart:

Sir Wm. Osler says: "My feeling on the subject of international, intercolonial, and interprovincial registration is this—a man who presents evidence of proper training, who is a registered practitioner in his own country and who brings credentials of good standing at the time of departure, should be welcomed as a brother, treated as such in any country, and registered upon payment of the usual fee."

This paper, which I am about to read, owes its inception to a letter received by me (it was a circular letter sent to the teachers of crown and bridge work) from Dr. Ottolengui, the letter itself founded on an article or series of articles appearing in the "Items of Interest."

Replying to Dr. Ottolengui's letter, I said: "You have certainly opened up a very large question, a question, however, which must find a solution, if dentistry is to occupy the place to which it is entitled in the professional life of the world.''

Shortly after the receipt of this circular letter, I received an invitation to appear before your Society, and this accounts for my presence here this evening.

After seven years of exclusive hospital practice, in which not less than one thousand cases a month are seen, there is absolutely no doubt in my mind, that much of the bridge work, as practiced in this country, is constantly associated with, and frequently the cause of serious septic conditions.

For the second paragraph there cannot be the same unqualified endorsement. The question is asked: ''Were it to be found that a certain surgical technique resulted in a mortality of eighty or ninety per cent., do you believe that reputable medical schools would continue to advocate such operations?''

Let me answer that question by asking another. ''What would be the mortality in major or even minor operations if all graduates in medicine were to attempt surgery?'' Is it not true that the vast maority of medical graduates never attempt even the most simple operations in surgery? Tens of thousands of medical men never attempt the surgical removal of an appendix much less an operation for sarcoma or carcinoma, the removal of a kidney, the opening of the gall bladder, surgical treatment for duodenal ulcer, the removal of an eye, surgical treatment for mastoid disease, and most of these thousands would stand aghast at the suggestion of an operation on any part of the brain or surgical interference with the more important glands of the body. And yet, many of the surgical operations successfully performed every day in the year, are the veriest child's play when compared to some of the things which a dentist is called upon to do in the routine of ordinary practice. Still, all medical schools teach surgery of every possible nature. Why? For two reasons principally: First, as a foundation on which a student may build to become a specialist; and second, because ''the masses,'' under existing conditions, cannot procure the services of specialists.

In the third paragraph of the article referred to, the question is asked: ''Is it that bridge work itself is wrong in principle?'' My answer to that question is, ''No.'' But there are places where bridge work *of any kind* is contra-indicated, and in all cases there are difficulties to be overcome, properly to cope with which, requires a very high standard of ability. The mere mention of some of these difficulties will suffice, *e.g.*, proper preparation of the abutment teeth; the physical strain on both patient and operator; the destruction of serviceable tooth tissue; the proper preparatory root canal treatment, when such is necessary; the unavoidable wounding of adjacent tissues; all of these and many others will immediately suggest themselves to any man who has ever attempted any kind of bridge work.

The third paragraph is certainly full of "food for thought." "Where lies the responsibility?" This is a question very difficult to answer. Much of the difficutly lies primarily in man's innate cupidity. *Patients* think that the "gold" in a bridge in some way makes the most desirable restoration, and being "gold" must of necessity be "expensive." Many dentists deliberately foster this idea in order to trade on the ignorance and credulity of their patients. Not lack of "skill" but lack of common honesty is accountable for many of the most abominable and disastrous attempts at so-called "bridge work."

But there is another side. To properly fit a bridge of any kind in a patient's mouth is an exceedingly difficult task; in many instances so difficult that few, if *any*, dentists possess the necessary skill, and few, if any, patients possess the necessary degree of endurance to permit the operator to put such skill into practice.

The next question is a poser: "Does not the remedy lie in removing this from the sphere of general practice because of the incompetency of the average dentist, and erecting it into a specialty to be conducted only by men who have elaborated their skill by thorough post-graduate teaching?"

The question arises: "When should this post-graduate teaching be done?" Should it follow immediately upon graduation or should a man spend some years in general practice before taking the proposed post-graduate work? My own opinion is that every man should do general practice work for some years after graduation, before entering upon the work of any specialty. Many reasons might be assigned for the position. Specializing is very apt to produce a narrowness of vision. The man who has done nothing but specialize lacks the broad general knowledge, which comes only to the man who has done a little of everything.

The specialist who knows his specialty is the one who has come up "out of the great tribulation" of general practice, but the man who is and has been always, only a specialist, is apt to be just a trifle conceited and apt also to divide his confreres into two groups: first, the aristocratic class of specialist, and second, the great mass of unwashed general practitioners. The cure for this abnormal cerebration is an injection of serum, prepared from a culture of five years of general practice.

How are specialists made in medicine, in law, in any professional calling? Is it not from men who have taken a general course and done general practice first? Is a specialist more *honest* than the "average dentist"? Where will the teachers come from who will conduct this post-graduate work? Who will determine the nature of the teaching? What form of removable bridge work at the present time is "safe and sane"? Where will the men come from to take post-graduate work, if the teaching of bridge work be eliminated from the present curricula?

Think just for one moment of the result of abolishing the teaching of crown and bridge work from the general course in all our colleges. What would be the mental attitude of the student body to any subject of which he hears nothing in his four years of training? Would it not be something along this line: "Well, this subject cannot be of much importance or we would hear something of it during our course at college." Or, if a student hears nothing of the subject and learns nothing of the technique, and makes no attempt to do any of it, and sees nothing of such work in the mouths of the patients, if he learns nothing of the trials and difficulties, nothing of the evils attending badly performed operations, or sees nothing of the advantages of such work well done, nothing of the splendid service which well made bridge work is capable of rendering, how or why or where will the future bridge workers (specialists or general practitioners) receive their inspiration or be convinced of the necessity or advantage of special training for this particular line of work?

No. As I see the truth, bridge work is a legitimate part of the ordinary practice of dentistry, and the schools, instead of abandoning the teaching of crown and bridge work, must teach it more intensively, strive in this as in all our work, to inculcate not only better technic but higher morals, and above all, must emphasize the irreparable injury which a patient may suffer as the result of faulty or imperfect crowns and bridges, and at the same time teach every graduate that leaves our schools that such operations lower not only his own standing, but the standing of the whole profession, a profession, which at the present time, is recognized as a most important factor in the health and general well-being of the general public.

What would be the effect of limiting any class of operation to those who have taken post-graduate courses? Would it not inevitably be to limit the supply of such "specialists" and in consequence, limit the service of such specialists to the wealthy few, and what guarantee would any patient have that *honest* services were being rendered? Have you any idea that the teachers of post-graduate courses would inculcate a higher standard of morals than the teachers now on the faculties of our schools? Personally, I have no such idea.

In regard to examiners demanding "bridge work," "practical and theoretical," for examination, some change I am convinced is necessary. I suggested to the examiners of the Province of Quebec that "any form of restoration showing average judgment and skill in execution, should be accepted," but as yet, the suggestion has not been adopted. But examiners are appointed by "law," and there may still be some truth in the well-known statement, "the law is a hass."

In regard to the pathological sequences of fixed and removable bridge work, well—the great difficulty is not at that point. The man who cannot or will not prepare an abutment, or fill a root canal or make a crown that "fits" for a fixed bridge, will not prepare a cavity or fill a root or make an inlay or carry out the delicate technic necessary for a removable bridge. No. The solution of the problem, the importance of which cannot be over-estimated, has not, I think, been suggested in your circular letter. Ordinary men, with ordinary mechanical ability (many of them lacking ordinary honesty), are attempting to do a very extraordinary thing, for patients of not more than ordinary intelligence, ordinary endurance or ordinary appreciation. The result must always be a great percentage of "failures."

I do not wish to arraign the morals of the dental profession as a whole. I know them too well for that. I am too rich in the friendships of my professional confreres—as clean, as honest, as high minded, as any class in the world. But unfortunately (or perhaps fortunately) dentistry lacks the age-long traditions of law and medicine, and it is of comparatively recent date that the close connection between dentistry and the public health has given to the profession that importance which has secured for it recognition as one of the learned professions.

It is true, nevertheless, that we have in our ranks all too many of that class who see only the mechanical part, and who are willing to take advantage of recent professional and scientific advances to commercialize a calling designed, as few callings in life are designed, to add to the health and comfort of practically the entire human race.

But every profession has its quota of dishonest men. Medicine has its quacks and abortionists. Law has its shysters; the clergy has its hypocrites; ''C.A.'s'' (chartered accountants) have men whose business is to ''cover assets'' in order to defraud the Government out of legitimate taxes.

But one thing surely can be done. Let us ''carry on'' in our schools, trying to send out men who will recognize that patients come to them for advice and service, that such patients are at the mercy of those to whom they apply for treatment, and that faithful, honest service should be the watchword of every right thinking man.

In paragraph 5 of the circular letter, mention is made of a ''removable bridge so constructed that no use of the bridge itself adds to the stress upon the remaining natural organs.'' In the ordinary acceptation of the words ''bridge'' and ''abutment,'' I cannot see how such a thing is possible. Surely in every bridge the abutments carry not only the weight of the superstructures, but in addition, the weight of any ''load'' that may be placed on such superstructures. If that is not a fundamental principle in engineering, then I have mistaken the meaning of some very ordinary English words.

In the same paragraph the statement is made: ''If those abutments should become diseased, they are in the same category as a filled tooth, which should become diseased, and the cause of the disease is not the bridge itself.''

The questions naturally arise at this point: (1) ''What diseased conditions do we usually find in these abutment teeth and what causes these conditions?''

To answer the first question, ''What diseased conditions do we usually find in these abutment teeth,'' let me say in general terms, inflammation of gum tissue surrounding the teeth.

(2) Inflammation of the peri-cementum, and (3) inflammation of the nerve tissue or pulp within the tooth. In all of these tissues we have the usual symptoms, redness, swelling, pain, loss of function, suppuration.

There is a phase of this question being continually raised, which I think does not enter the discussion at all and should not be dragged in as a matter of primary importance. We hear from men, apparently thoughtful, such expressions as the following: "Oh, I've seen removable bridges which were just as filthy and dirty as any fixed bridge work," or "I have even seen partial dentures which were as filthy as any type of bridge could possibly be." All are agreed on the facts so stated, but such statements are all foreign to the question. Any kind of denture, full or partial, any kind of removable bridge may be so neglected as to become filthy, to any conceivable degree, but the construction is in no way responsible for the filthy condition nor for any pathological conditions that might arise as a consequence of the filth. But in a case of fixed bridge work, the very construction itself, and the fact that it is fixed, renders cleanliness impossible by any ordinary toilet means, and in addition, fixed bridge work, as we see it in the vast majority of cases, is directly responsible for local pathological conditions and systemic infections, so varied in character and so appalling in extent, that no man in ordinary dental practice, can form any adequate conception of the gravity of the situation.

There is a phase of this question which I know many of you are anxious to hear about. I have no doubt many of you have heard the expression "Teeth move in function." Without wearying you with detail or lengthy discussion, let me say that the claim has been made that because two or more natural teeth, used as abutments for a fixed bridge have become spontaneously non-vital, and in consequence have become foci of infection, this non-vital condition is due to lack of movement of the several teeth, and that this lack of movement is due to a rigid appliance, fixed to the several teeth. Now, I am willing to admit that a great many vital teeth have become non-vital when used as abutments for fixed bridges, and that serious systemic effects have followed this traumatic devitalization.

But I am not sure that the devitalization of these teeth is due to lack of movement, which in turn is due to the fixity of the entire appliance. I think I am safe in saying that in the past six years we have removed hundreds of pieces of fixed bridge work from the mouths of hospital patients. When I tell you that at one time (I mean at the same identical moment) we had in our examining room four women, in whose four mouths there were forty-seven gold crowns, you will acknowledge that we have the experience upon which to base tolerably authentic conclusions.

As our clinic is an integral part of a large hospital, and as we are not far from the international line, we see patients not only from our own city but from many parts of the cities and States of the Union as well. The nature of the work does not differ in different localities. In the vast majority of such cases we have found apical abscesses in many, many cases. When the bridges and gold crowns were removed we found teeth without cavities, and, of course, unfilled nerve canals. Even in teeth with large cavities we have found a great many where no attempt had been made to fill root canals. Because of these conditions we came to the conclusion that the crowns had been adapted to vital teeth and these teeth had become non-vital. Why? In my opinion there is not the shadow of a doubt that the cause of the devitalization of these teeth had its inception at the gingival margin, and that the inflammatory process which finally resulted in the death of the tooth was caused primarily by an ill-fitting crown, wounding, lacerating the thin gingival margins with their one or two layers of epithelial cells.

Because of the work which has been done by Box of Toronto, Noyes of Chicago and others, we know that the blood supply of the pericementum runs parallel to the long axis of the tooth, that lymphatics accompanying these blood vessels and that the infection begun at the gingival margin soon finds its way to the apex, causing the death of the pericementum and the periapical tissues.

But we have found the same condition exactly in single teeth, bicuspids, molars, centrals, laterals, cuspids, where an ill-fitting gold crown, produced first an inflamed, gingival margin and finally an intensely inflamed area extending, in nearly every instance, to the apex.

Not loss of motion but infection made possible by the breaking down of the defence area, the gingival margin, in the single tooth as well as in the tooth used as an abutment for a bridge, is the answer to the question "Why are so many crowns constantly associated with and frequently the cause of serious septic conditions?"

A somewhat new phase was given to this question, following a discussion of the subject in this city a short time ago. I refer to the introduction of the cement question and the connection of the cementing medium to gingival irritation and infection.

I think that it was unfortunate that, without directly stating the fact, the impression was left that in a crown embodying the full band principle, a cementing medium of a certain nature would in some way atone wholly or in part for faulty adaptation.

It is hard also to understand a sentence of this nature: "All three types of the gold crown mentioned have the objection that they have the band around the root, which when properly fitted, made as thin as possible and retained with a good antiseptic cement, while not very hard on some teeth, is quite so on others." Compare that statement with the following from the same source; the statement occurs while referring to open faced crowns: "Later observations led us to believe that neither of these crowns irritated the gingiva *very much* in many cases, if the partial or full crown properly fitted the root, and more recent observations have caused us to add, if the cement is a modern one."

It is a truism, is it not, that "like causes produce like results." If so, then how is it possible for a certain type of operation to be "not very hard" on some teeth, but "quite so" on others. Then take the other statement, viz., neither of these crowns irritated the gingiva "very much."

I can scarcely think that the author of the statement has been correctly quoted. If the quotation be correct, then I wish to say that the "muchness" of the irritation is always in direct ratio to the imperfection of the adaptation of the band, and no kind of cement (of which we have any knowledge) will prevent serious irritation with all its attendant evils. Permit me to quote another sentence emanating from the same source, "I am convinced more and more firmly that a removable bridge is uncalled for, and may be much more unsanitary for the twenty-three hours and thirty minutes of the day that it is in the mouth, than a good fixed one is when retained with a good copper cement."

You will notice that the adjective "good" is made to qualify only the "fixed" bridge. But, apart from that, how is it humanly possible for a removable bridge to accumulate more filth in a given time than a fixed bridge for the same time? What is there in the construction or adaptation of a removable appliance that will bring this about. The writer suggests in the sentence that at least once a day a removable appliance may be removed and made clean. Then is it reasonable to suppose that an appliance which may be made clean at least once a day, can by any possible means be more filthy (other things being equal), than a fixed appliance that can never be made clean. As well tell me that a man who baths once a day (other things being equal), will be as dirty as a man who never takes a bath!

Let me make this statement and make it absolutely without reservation, "I have removed scores and scores of fixed bridges from the mouths of hospital patients and I have never removed one such that was not filthy in the extreme, and in many of these cases the other teeth were clean and showed every evidence of successful toilet attention.

Permit me to read another sentence from the article to which reference has already been made, with which I am in perfect accord, viz., "So long as there are variations in ideals and ability it is useless to urge the profession to the use of one kind of bridge work or to expect various kinds to be executed with the same degree of perfection."

There can be no adverse criticism of that sentence . It would be useless to expect to make a great painter out of a man who is color blind or a musician from a person who cannot distinguish between harmony and discord. So it is quite impossible to teach a man, lacking altogether in mechanical ability, to do a thing so difficult as inserting a mechanical appliance, the requirements of which are so varied and so difficult as the work which we are discussing.

I have been attempting to teach bridge work for some years, and I confess that I am not proud of the effort if I am to judge from much of the work which I see. But I have tried to formulate certain principles and these seem to have followed a natural process of evolution.

My first well-established principle given to my students was this, "In all your crown and bridge work strive for 'accuracy of adaptation.' " But this was not enough and I soon added this, "Continuity of outline." After some time, this third precept was added, "Conservation of serviceable tooth tissue," and lately I have added the fourth, "Harmony and environment."

I try to teach students a technic that will enable them to fulfil these principles, but I am conscious all the time that "to some He gave one talent, to some two, to some five," convinced too that in the great majority of cases it is the man with the five talents that trades and makes other five while he who has only the one or the two is content to hide his in a napkin, and the result of this lack of ability or desire for improvement is seen in the aesthetic and anatomical monstrosities that are an offence to the eye and a menace to the health of the unfortunate persons who are the victims either of ignorance or cupidity.

DISCUSSION.

Dr. E. C. Jones (New Westminster): Mr. President and Fellow Practitioners: I have been casting around in my brain to find out why your committee should have asked me to open the discussion on this paper. It is the last paper of the session, and this will be the last discussion of the session. We are all very tired, and the committee evidently thought that as I had travelled some three thousand miles to get here I would be so tired that I would shut up quickly. In fact, on my way up to the platform one of the boys said to me as I was passing: "For heaven's sake, be brief."

It affords me some pleasure to make a few remarks on a paper of this kind, particularly so because—I was about to say that I was associated with Dr. Thornton at one time. Fifteen years ago I was associated with him in this way. He was the Professor in crown and bridge work at the Royal College and drew the salary. I was a demonstrator to assist him and did the work. But I say in all earnestness, gentlemen, that I learned more during that year of association with Dr. Thornton about crown and bridge work, and it has done me more good, than all I have learned since, and I think I have learned a lot since.

However, I cannot agree with all that he has said in his paper. I cannot take quite so optimistic a view as he does of modern dentistry or so-called modern dentistry as we have been practicing it during the last fifteen or twenty years. In fact, I am almost as pessimistic as Dr. Ottolengui with regard to some of the bridgework that we see in mouths to-day. Dr. Ottolengui has made the statement that most modern crown and bridge work is septic dentistry. I am sorry to say I think it is true. I was a little disappointed that Dr. Thornton was not more specific in regard to what he considered was good practice. We are anxious to learn the result of his findings as to what class of crown and bridgework he thinks at this stage is good to use. I remember that at college he was quite specific about some things. I remember that when he was teaching the making of gold shell crowns he told us never to devitalize if it was possible to avoid it, and I am thankful he told us that, in spite of the fact that other authorities advocated devitalizing in every case. He was quite specific when he spent a day in teaching us how to make a seamless crown by the outside-inside method, and then spent another half-day teaching us to do it by the inside-outside method, then he said: "Gentlemen, I have told you how to make them, but none of them are any damn good!"

Dr. Abbott: I rise to remark that Dr. Thornton never made use of the word "damn."

Dr. Jones: That is the western way of expressing what he said. I shall be more specific than he was and say I believe that the manufacture and placing of gold crowns on the teeth of patients during the last fifteen years has done more harm than good to the health of humanity, that is, taking into consideration those that were put on by the charlatans and the quacks, and all quacks have not been in the advertising class, either. I think that more harm has been done than good; it would be better if the gold crown had never been invented. I hate to say that, but I believe it is true. I do not say that a gold crown has not its place in dentistry. I believe it has. I make them myself—not very often, but occasionally I do, and I think they have a place, but as they have been made I think they have practically no place.

I do not think it is good practice generally to devitalize a sound tooth, under practically any condition, in order to make it an abutment for a bridge. I hope there are none of you who do that now. Some years ago I did it myself, but in the light of our present knowledge of focal infection I do not believe that it is good practice. Further, I think it is never wise to mutilate a sound tooth to insert an inlay or crown as an abutment for the bridge, even if you do not devitalize it. I believe there are many removable appliances that can be used to advantage. I have in some cases used that taught by Dr. Roach, the catch-clasp. Or there are the more complex appliances to be used where you have already filling in the teeth—some of the attachments as invented by Dr. Roach or Dr. Morgan or Dr. Chase. If you have the ability to make these appliances they are good, but never mutilate a sound tooth in order to make use of them.

I think that the fixed bridge has a small place in dentistry. I make a few of them. I would like to have heard Dr. Thornton's opinion of the fixed bridge—whether it has any place in dentistry. I think it has in short spans, and if you use, possibly, a three-quarter gold crown—a modification of the Carmichael which does not require devitalization of the tooth. But these things must be carefully made if used at all.

In closing I do not think I can do better than cite a few remarks of the essayist with which I wholly agree. Bridge work is a legitimate part of dentistry, but the schools must teach it more intensively and emphasize the irreparable injury which a patient may suffer as a result of faulty and imperfect crowns and bridges. I thank you, gentlemen.

Dr. Nolin: Mr. Chairman: Dentistry seems to be going round in vicious circles. Some forty years ago the National Association excluded from its membership a certain number of distinguished practitioners of New York and other places because they filled teeth with amalgam. The use of amalgam filling was declared by the most eminent men in America, leaders in the National Association at that time, to be unprofessional, and was condemned outright. In the light of what we know to-day about amalgam, we smile when we recall the attitude of the men of that day. If you read the old authors on bridge work you will find from the very start that to which we are coming back, that is to say, perfect fitting crowns at the neck of the teeth, something we seem to have forgotten since demountable bridges were taught.

The teacher of bridge work, as Dr. Thornton implies in his paper, is at a loss what to do or what to say. He may teach the principles of bridge work as carefully as he can, but in a class of thirty there may be a large number of young men who, as soon as they go into practice, will do their bridge work in an entirely different way. Should we condemn outright fixed bridge work? When we look at the abominations that come to us in hundreds of mouths, we almost feel that we should. However, we do know of numerous cases where bridge work has given good service—where it has, perhaps, restored the function of mastication and thus saved life. So we are still in a dilemma. Is the removable bridge the solution? Is the substituting of partial plates the solution? Still the point of interrogation remains. A few years before the war Dr. Lejedorez had been studying and practising a method of bridgework which, to my mind, may be a solution of the problem which we face. In a paper which I read in Toronto a year or two before the war I gave a very short and, to my mind, unsatisfactory, exposition of that eminent gentleman's work, in connection with which I showed a few models that I had made. I have tried his system in the mouths of a number of patients, and the results have been rather satisfactory. It is a system of bridge work in which a cast band, somewhat similar to the band we make for orthodontia, goes slightly over the masticating surfaces but not quite down to the gums. A band is made with wax; a kind of elongation on the side of the bridge is made; the wax is split open and passed over the tooth, which has not been ground, not a bit of enamel removed. That band is cast and replaced over the tooth. The contraction of the gold has caused the opening to remain slightly open; this is pressed back into place, giving as perfect an adaptation as anything will give to the surface of the tooth. Then a cast bridge to fit over this is made. The bands are then screwed into place and the bridge is fixed to these abutments with pins that go through, leaving to the bridge a certain motion, and we have a bridge that can be taken out of the mouth, cleaned up and replaced in the mouth in half an hour's time. When the war broke out I do not know what became of Dr. Lejedorez. I believe that he took up war work, and I have not heard anything about him since. His work has not been given publicity, but it should. This is a line of thought which it would be to the advantage of the profession to work upon in future years.

I congratulate Dr. Thornton on his very interesting paper. We know that Dr. Thornton never addresses any gathering without those present feeling the better for it and appreciating the privilege of hearing him.

Dr. Fleming: I am sure that we all listened to Dr. Thornton's paper with a great deal of interest. We always expect a treat when he appears on a convention platform, and we are never disappointed.

There are some statements in Dr. Thornton's paper, however, with which I cannot agree. You know, there is a little bit of Scotch in my make-up—Scotch blood, I mean; that is the only kind of Scotch I have. They say a Scotchman always goes in backward, so I am going to start near the end of Dr. Thornton's paper and offer a criticism first.

He spoke of the man with the five talents, the man with two talents, and the man with one talent. He always quotes Scripture when he gets up to give a paper. On this occasion, however, he wishes to improve on the words of the good Master. He talks about wrapping the two talents and the one talent in a napkin, whereas the Master said to the man with the two talents: "Well done, thou good and faithful servant," the same as He said to the man with the five. We have not all got five talents. We have not all attained the distinction in the profession that Dr. Thornton has attained. Some of us have not attained distinction of any kind; we have not even become distinguished failures.

Fixed bridge work is something that is very much abused to-day, and it is not so much the fault of fixed bridge work as it is the fault of the operator. Dr. Thornton speaks of conscientious work. If we do fixed bridge work conscientiously we shall probably do a great deal less of it and the general standard of the work will be higher, but we shall not have to abandon it altogether.

It is unfortunate that a great many dentists—as is the case with other professional men—are in the business simply for the money that they can get out of it. Gold crowns are clapped on for the sake of the dollars and cents, as long as they will slide over the tooth it apparently does not make any difference to some men whether those crowns fit or do not fit. Yet there is money in it, therefore they do it. Just here I might quote something I heard in Toronto, where they always do good work. Dr. Thornton knows that; he lived in Toronto for a time.

Dr. Thornton: Sure.

Dr. Fleming: I have been practicing dentistry for twenty-five years or more. When I was a freshman at college I had the honor of being taken, under the wing of Dr. Frank Adams, of Toronto, to a meeting of dentists in that city. As a student I had no business to attend that meeting, but as I say, I got in under his care. Gold crowns were then not as commonly made as they have been since. In fact, I think there were some dentists in Ontario in those days who had never made a gold crown. However, these men had learned to make gold crowns, and at that meeting a dentist prominently spoken of in Toronto as one of the good dentists of that city made the statement that you could save almost anything in the form of a root now with gold crowns, that in cases where the top of a lower first molar was gone you could fill the roots and push a gold crown over them with satisfactory results. Now, speaking about extremes of opinion, some men will grab the pendulum, swing with it as far as it will go, then they jump after that. Men who hold such extreme views are bound to come to grief. Some five years ago, at a meeting of the Ontario Dental Association, I heard that man—the same man who was going to put gold crowns on everything—make the statement—not in public, but before a group of men—that the man who would put gold crowns on teeth should be regarded as guilty of malpractice and that his license for the practice of dentistry should be cancelled. There was the case of one man who said at one time: "Put on everything," and who said some years afterwards: "Put on nothing." On the first occasion he swung with the pendulum one way as far as he could get; the next time he swung the other way to the other extreme. He forgot the Pleasant Valley of Common Sense in between.

Now, if we put gold crowns or fixed bridges on for our patients only as we would have them put on for ourselves, there would be many more better-fitting bridges and more bridges that can be kept clean. All fixed bridges are not necessarily dirty, with all due deference to Dr. Thornton's statement. I think that the dirtiness of fixed bridges rests not so much with the bridge itself as it does with the operator who has made it and put it on and with the patient who wears it. As to the cause of diseased conditions in abutment teeth, I understood Dr. Thornton to say that it was the dirty condition around the neck of the tooth. Was I right in that?

Dr. Thornton: No; it was the inflammation having its inception at the gingival margin.

Dr. Fleming: A bad-fitting gold crown would cause that inflammation—the pushing of the gold crown down under the margin of the gum, the crown being too large and not properly fitting the tooth.

Now, I do not wish to hold myself up being better than anybody else in the matter of crown and bridge work. I am only one of the small "toads in the puddle." But if Dr. Thornton ever happens to be in my town I think I can show him two fixed bridges that were put on twenty-three years ago, both in one mouth—and, by the way, each of them is attached with an open-face crown to a cuspid and a full gold crown to a second molar—and he will find that those bridges are just as clean as the average removable bridge. The bridge is made in such a way that the patient has a chance to keep it clean, and she does keep it clean. I do not think, therefore, that all fixed bridges can justly be condemned as filthy or as bad fixtures, provided they are properly made and properly fitted and the whole of the work is done conscientiously.

Dental Societies

DOMINION DENTAL COUNCIL EXAMINATION RESULTS—FALL EXAMINATIONS, 1920

The following have passed in:

Operative Dentistry (paper)—R. B. Bishop, I. K. Farrer, D. D. McDonald.

Operative Dentistry (practical)—I. K. Farrer, D. D. McDonald.

Prosthetic Dentistry (paper)—R. B. Bishop, R. E. Dinniwell, I. K. Farrer, D. D. McDonald.

Prosthetic Dentistry (practical)—I. K. Farrer, D. D. McDonald.

Orthodontia.—R. B. Bishop, I. K. Farrer, D. D. McDonald.

Jurisprudence and Ethics—B. R. Coysh.

Medicine and Surgery—I. M. Benezra, H. G. Lough, D. D. McDonald.

Pathology and Bacteriology—B. R. Coysh, V. D. Crowe, A. Derbyshire, R. E. Dinniwell, I. K. Farrer, M. D. Finnigan, F. E. Lent, G. P. McIntosh, D. D. McDonald, P. R. Wilson.

Materia Medica and Therapeutics.—A. A. Cameron, A. Derbyshire, A. P. Daly, R. E. Dinniwell, I. K. Farrer, M. E. Finnigan, R. E. Johnston, F. E. Lent, N. McGreggor Layton, G. P. McIntosh, D. D. McDonald, A. B. Porter, C. W. Steele, P. R. Wilson, J. P. Whyte.

Anatomy.—F. W. Beach, A. Derbyshire, A. P. Daly, W. L. Fluck, J. M. Gabriel, Wm. R. Jackson, R. E. Johnston, W. F. Keith, W. J. Langmaid, N. McGreggor Layton, J. N. McGrath, J. Olson, A. B. Porter, J. S. Ritchie, A. E. Rupert, A. R. J. Snell, G. E. Teal, M. R. Wilson, J. P. Whyte, W. H. Young.

Physiology and Histology.—B. F. Charles, A. Derbyshire, H. W. Dixon, A. P. Daly, Jas. D. Evans, H. J. Fahey, W. L. Fluck, R. R. Hodgkins, Wm. R. Jackson, H. N. Knight, N. McGreggor Layton, J. S. Ritchie, E. A. Rupert, A. R. J. Snell, M. R. Wilson, J. P. Whyte, W. H. Young.

Physics and Chemistry.—H. H. Cummer, H. W. Dixon, W. L. Fluck, Z. I. Groneau, C. C. Graham, R. R. Hodgkins, Wm. R. Jackson, W. J. Kerr, L. J. Lequeyer, E. A. McMillan, J. Olson, G. L. Prestein, A. B. Porter, E. A. Rupert, A. R. J. Snell, W. E. Wessels, W. H. Young.

Anaesthetics.—I. M. Benezra, R. B. Bishop, B. R. Coysh, I. K. Farrer, D. D. McDonald.

CHICAGO DENTAL SOCIETY ANNUAL MEETING

That the fifty-seventh annual meeting and clinic of the Chicago Dental Society, held at the Congress and Auditorium hotels, Chicago, Ill., U.S.A., January 27-29, was the most successful and important in the history of the organization, was the consensus of opinion of 5,000 visiting dentists and members of the society at the close of the meeting. In mere matter of attendance the meeting was the largest ever held, and questions before the dentists—both along clinical and general topics—commanded more attention from both dentists and the public than ever before.

Mouth hygiene was probably the chief topic of the meeting, Friday, January 28, was called Mouth Hygiene day. During the week of the meeting, the public schools of Chicago held mouth hygiene meetings and lectures each day. The school children listened to talks on mouth hygiene, and held toothbrush drills and the like each morning. Children from each public school were present at the morning clinics Friday to demonstrate what they had learned about the important topic of mouth hygiene. A mass meeting held at 3.30 Friday afternoon at the Auditorium theatre included 1,600 teachers, whose classes had been dismissed by Peter Mortensen, Superintendent of Schools, so that they might attend this meeting.

Directly in connection with the mouth hygiene movement was the stressed point of mouth hygienists. Visiting dentists urged that the State of Illinois pass the law now operating in ten states that creates the mouth hygienist, a profession similar to the trained nurse in the medical profession. Mouth hygienists will be largely recruited from the ranks of dentists' assistants, who will be able, after the law is passed, to do actual work upon a patient's mouth—something now prohibited. A course at some dental college, of course, would be necessary to qualify under the law, but the requirements of the ten states now using the law make the term of study comparatively brief. The hygienists also will work in the school clinics and dental infirmaries.

A banquet held Friday night, January 28th, in the Gold room of the Congress, was attended by 700 visitors. Thomas Alexander Forsyth, Boston, founder of the famous Forsyth Dental Infirmary, was to have been the guest of honor, but a nervous breakdown prevented Mr. Forsyth, who is not a young man, from being present. However, the value and necessity of a dental infirmary, as typified by the Forsyth institution, was discussed enthusiastically by the speakers of the evening. Among the guests were President Harry Pratt Judson, the University of Chicago; President Walter Dill Scott, Northwestern University; Peter Mortensen, Superintendent Chicago Public Schools; Dr. John Dill Robertson, Chicago Commissioner of Health. Some of the speakers were: Dr. Timothy Leary, Boston; Dr. Guy S. Millberry, San Francisco, dean of the dental department in the University of California; Dr. Harvey J. Burkhart, Rochester, New York; Dr. A. W. Thornton, Montreal, dean of the dental college in McGill University; Dr. H. E. Friesell, Pittsburgh, Pennsylvania, president of the National Dental Society, and Dr. G. N. Johnson, Chicago.

Nearly one hundred clinics, on every possible technical subject, were held during the three days of the meeting. A large meeting was held in Orchestra Hall on Thursday night, January 27th, at which Dr. Ernest E. Irons, Chicago, gave an illustrated lecture on "Chronic Infections and Their Sources." Other talks, delivered before large audiences, were those by Dr. Wallace Seccombe, Toronto, Canada, on "Diet in Relation to Oral Hygiene"; Dr. William A. Evans, Chicago, on "Child Health in Relation to Adult Health"; Dr. Alfred C. Fones, Bridgeport, Conn., director of dental hygiene in the Bridgeport Public schools, on "Mouth Hygiene in our Public Schools."

Dental exhibits took up a good deal of space in the two hotels, over one hundred concerns having exhibits. For the first time in history the samples of tooth-paste, mouth wash, etc., were exhausted during the first day of the meeting—and the exhibitors had brought over 7,000 pounds of material. More samples were shipped in after hasty telegrams. Officers of the Chicago Dental Society are: George G. Knapp, president; E. D. Coolidge, vice-president; M. M. Printz, secretary; H. B. Pinney, treasurer; A. M. Hewett, librarian.

MASSACHUSETTS DENTAL SOCIETY

The fifty-seventh annual meeting will be held in Boston, Mass., at the Hotel Somerset, May fourth, fifth and sixth, 1921. A cordial invitation is extended to all members of recognized dental societies.

Thanking you in advance, I am,

Sincerely yours,

W. Vernon Ryder, Secretary.

CLASSIFICATION OF THE DENTAL SCHOOLS OF THE UNITED STATES BY THE DENTAL EDUCATIONAL COUNCIL OF AMERICA

CLASS A.

University of Southern California, College of Dentistry, Los Angeles, Calif.

University of California, College of Dentistry, San Francisco, Calif.

Northwestern University Dental School, Chicago, Ill.

University of Illinois, College of Dentistry, Chicago, Ill.

University of Iowa, College of Dentistry, Iowa City, Iowa.

Harvard University Dental School, Boston, Mass.

Tufts Dental College, Boston, Mass.

University of Michigan, College of Dentistry, Ann Arbor. Mich.

University of Minnesota, College of Dentistry, Minneapolis, Minn.

St. Louis University Dental School, St. Louis, Mo.

Creighton University, College of Dentistry, Omaha, Nebraska.

University of Buffalo, Dental Department, Buffalo, N.Y.

Ohio State University, College of Dentistry, Columbus, Ohio.

North Pacific Dental College, Portland, Oregon.

University of Pittsburgh, College of Dentistry, Pittsburgh, Penn.

The Thomas W. Evans Museum and Dental Institute, University of Penn., Philadelphia, Penn.

Vanderbilt University, School of Dentistry, Nashville, Tenn.

Medical College of Virginia, School of Dentistry, Richmond, Va.

Marquette University, College of Dentistry, Milwaukee, Wis.

CLASS B.

College of Physicians and Surgeons, Dental Department, San Francisco; Cal.

Colorado College of Dental Surgery, Denver, Col.

Georgetown University, School of Dentistry, Washington, D.C.

George Washington University Dental School, Washington, D.C.

Howard University Dental School, Washington, D.C.

Atlanta-Southern Dental College, Atlanta, Ga.

University of Louisville, College of Dentistry, Louisville, Ky.

Chicago College of Dental Surgery, Chicago, Ill.

Indiana Dental College, Indianapolis, Ind.

Loyola University, School of Dentistry, New Orleans, La.

Tulane University, School of Dentistry, New Orleans, La.

Baltimore College of Dental Surgery, Baltimore, Md.

University of Maryland, Dental Department, Baltimore, Md.

Washington University Dental School, St. Louis, Mo.

Kansas-City-Western Dental College, Kansas City, Mo.

University of Nebraska, College of Dentistry, Lincoln, Nebraska.

New York College of Dentistry, New York, N.Y.

College of Dental and Oral Surgery of New York, New York, N.Y.

Western Reserve University, Dental School, Cleveland, Ohio.

Ohio College of Dental Surgery, Cincinnati, Ohio.

Philadelphia Dental College, Philadelphia, Penn.

University of Tennessee, College of Dentistry, Memphis, Tenn.

Meharry Dental College, Nashville, Tenn.

Baylor University, College of Dentistry, Dallas, Texas.

CLASS C.

Jersey City Dental College, Jersey City, N.J.

University of West Tennessee, Memphis, Tenn.

Texas Dental College, Houston, Texas.

Cincinnati College of Dental Surgery, Cincinnati, Ohio.

Note.—These classifications were all made upon the basis of the requirements in force prior to April 30th, 1920.

ESSEX COUNTY DENTAL ASSOCIATION

At the December meeting of the Essex County Dental Association held at the Essex Golf and Country Club, Windsor, the following officers were elected for the ensuing year: President, Dr. H. P. Martin; vice-president, Dr. L. D. Hogan; secretary-treasurer, Dr. H. L. Smith; programme committee, chairman, Dr. W. Revell, Dr. Martin, Dr. Hogan.

ELGIN DENTAL SOCIETY

The members of the Elgin Dental Society met at St. Thomas on December 15th.

In the afternoon Dr. W. J. Laker of Toronto, who specializes in Exodontia, gave a very successful and practical clinic.

It was positively demonstrated that infection at the apex of a tooth can and should be removed.

Infectious conditions were removed from sockets after removal of tooth, which by this method cannot be called real extraction but surgical removal.

In the evening a most appreciated paper was read by Dr. Laker, who pointed out the danger in removing too much oral infection at one sitting, also it was pointed out the great danger to patient if infectious matter is allowed to remain in "situ" even if tooth is extracted, the lack of systemic relief and favorable result were attributed greatly to these causes.

Too rapid, careless, and too much extraction with lack of surgical care of wounds came in for a discussion, showing that to-day methods are at least to be done in a different manner than in past.

FIFTY-FOURTH ANNUAL CONVENTION OF THE ONTARIO DENTAL ASSOCIATION

MAY 2nd, 3rd, 4th and 5th

ESSAYS — PROGRESSIVE CLINICS

Keep abreast with the trend of thought of modern dental practice.

See demonstrated in the clinics the later developments in methods of procedure and technique.

DO NOT FORGET the benefit of mixing with your fellow-practitioners. You get their view-point. If you are lagging you find it out and are inspired to catch up. If you are away in the lead we need you to bring the other fellow up to date. —*COME*.

At the annual meeting of the Regina Dental Society Dr. R. S. Grant was elected president of the Society for the ensuing year, Dr. M. R. Parkin, vice-president, and Dr. F. S. Van Woert, secretary.

AMERICAN INSTITUTE OF DENTAL TEACHERS

At the annual meeting of the American Institute of Dental Teachers, held at Indianapolis, Indiana, January 24th, 25th and 26th, the following officers were elected for the ensuing year:

President—Dr. Guy S. Millberry, Univ. of California, San Francisco, Cal.

Vice-President—Dr. A. H. Hipple, Creighton Univ., Omaha, Nebr.

Secretary-Treasurer—Dr. Abram Hogman, 381 Linwood Ave., Buffalo, N.Y.

Executive Board—Dr. A. E. Webster, Royal College of Dental Surgeons, Toronto, Ont., one year; Dr. E. D. Coolidge, Univ. of Illinois, Chicago, Ill., two years; Dr. H. E. Wheeler, College of Dental and Oral Surgery, New York City, three years.

The next meeting will be held the third week in January, 1922, at Montreal, Que.

Editorial

EDITOR:

A. E. Webster, M.D., D.D.S., L.D.S., Toronto, Canada.

ASSOCIATE EDITORS:

ONTARIO—M. F. Cross, L.D.S., D.D.S., Ottawa. Carl E. Klotz, L.D.S., St. Catharines.

QUEBEC—Eudore Debeau, L.D.S., D.D.S., 396 St. Denis Street, Montreal; Stanley Burns, D.D.S., L.D.S., 750 St. Catherine Street, Montreal; A. W. Thornton, D.D.S., L.D.S., McGill University, Montreal.

ALBERTA—H. F. Whitaker, D.D.S., L.D.S., Edmonton.

NEW BRUNSWICK—Jas. M. Magee, L.D.S., D.D.S., St. John.

NOVA SCOTIA—Frank Woodbury, L.D.S., D.D.S., Halifax.

SASKATCHEWAN—W. D. Cowan, L.D.S., Regina.

PRINCE EDWARD ISLAND—J. S. Bagnall, D.D.S., L.D.S., Charlottetown.

MANITOBA—M. H. Garvin, D.D.S., L.D.S., Winnipeg.

BRITISH COLUMBIA—H. T. Minogue, D.D.S., L.D.S., Vancouver..

VOL. XXXIII. TORONTO, FEBRUARY 15, 1921. No. 2.

ORAL HYGIENE OR DIET—WHICH?

The Institute of Dental Teachers met in Indianapolis during the last week of January, 1921, and immediately following this meeting was that of the Chicago Dental Society in Chicago. There seemed to be one prevailing note in both of these meetings, "Oral hygiene and dental service for the people." The Indianapolis meeting discussed a curriculum of study for the hygienist who, by the way, is the latest adjunct to the dental profession. She is trained in one college term to perform oral prophylaxis for patients and give such instruction to people as will help them to keep clean mouths. There are three recognized schools for training oral hygienists in America. There are a dozen or more states in which the hygienist is recognized by state laws. The dental profession recognizes that oral prophylaxis is a great factor in public health and also that as a profession they are unable to cope with such a large undertaking.

It is admitted that only 80 per cent. of the people receive dental services and that there are not enough dentists to give everyone who needs such services what they are entitled to. While the great need for dental services is conceded, the tendency among dental educators is to further restrict the number entering the profession by increases in the number of years of study and raising the standard of education. By present computation there will be fewer dentists in the United States in 1923 than at the present time, while on the other hand there will be an increased demand for dental services. The dean of Harvard Dental School really dropped a bomb among the dental teachers when he said the dentist of the future would examine, diagnose and direct the treatment of dental troubles but would not himself make the mechanical operations. The hygienist would perform the prophylaxis, the prosthodontist or mechanician would make the artificial restorations as the builder works under the architect. Thus advantage would be taken of the dentist's superior knowledge and education to its full extent while that which requires less skill would be done by less expensive labor. The trained dental nurse, dental mechanic and hygienist are all looking in this direction. A trained operator is another necessary part of the group. It was most interesting to hear what criticisms were made of Dean Smith's remarks. None undertook to debate the question openly but many remarked privately that what he was talking about was not dentistry at all. Dentistry in the minds of many is repairing and restoring diseased and lost structures.

The hygienist, the dental mechanic and the dental nurse are now a part of dentistry. In California the High Schools are training dental assistants for dentists and thus it goes. The public will have dentistry. In Ontario the dental nurse is trained in the dental college. The training of the dental mechanic is under consideration. The hygienist has not yet been acknowledged.

Oral hygiene is said to be a large factor in public health. But an hygienic condition of the mouth is not best attained by either the mechanical or medicinal efforts of the dentist or hygienist. Their efforts are only needed where disease supervenes. The mouth of the puppy or the pig needs no prophylaxis other than that provided by nature's methods. Give a child natural foods containing fibrous constituents and vitamines, so that certain life giving factors may be present and its mouth will be clean. The unclean mouth is of dietetic origin. Then why should hygienists be introduced except to provide palliative measures until the main subject is understood?

The prodigious efforts of dentistry to cope with diseased teeth seems to be well nigh hopeless along the lines of present methods. Regular teeth in normal occlusion and not decayed in the mouth of a child properly fed do not need much brushing.

PUBLIC HEALTH SHOULD BE IN THE DEPARTMENT OF EDUCATION

The Department of Public Health of Ontario has for some years added to its police duties that of education in health. The department of education has been doing this same thing for twenty years or more until now it is looked upon as an essential part of public and high school education. Not only this but the department has regularly organized medical and dental examination and treatment of its own pupils, but the public health officers examine the buildings. Nurses and assistants are appointed from both departments, one examines the seven or eight children in a rural school after a drive of perhaps ten miles, and another examines the out building after a similar drive. This is stupid duplication. One officer might make both examinations on the same trip. The simple and easy way out of the difficulty is to place the Department of Public Health in the Department of Education. Then medical, dental and social services could be managed under one head.

DENTISTS ON HOSPITAL STAFFS

RESOLUTION OF THE NATIONAL DENTAL ASSOCIATION.

RESOLVED, That in the standardization of hospitals the personnel of the staff should include a competent dentist whose duties should include consultation with the attending physician and aid in diagnosis by locating the source of focal infection in the mouth; and be it

RESOLVED, That such dental member of the hospital staff should insist on thorough use of the X-ray for locating diseased teeth and pyorrhea pockets and that he should be trained in the correct interpretation of dental radiographs and that the interpretation of such radiographs be made preferably by the dental member of the staff; and that such dental member should supervise the instruction to nurses in the preparation of patients' mouths for operations and in the general oral hygiene for patients; and that he take care of any dental operations; and that a dental engine and other necessary instruments and apparatus for emergency operations of all kinds be provided.

Be It Further Resolved, That it is the sense of this Association that the suggestions made and the policy outlined in these preambles and resolutions be adopted as the future policy of the Association; and that it be earnestly requested that the hospital staffs be so constituted that the fullest co-operation may be had between the physicians and dentists in the diagnosis and treatment of cases.

Editorial Notes

Women are now admitted to practice dentistry in England.

❦

The rural schools of Oxford County are to have dental survey.

❦

The King's dentist attacks the afternoon tea habit as being bad for the teeth.

❦

The Jewish Medical Association of Palestine has established a medical journal.

❦

Some of the dental supply companies have announced a reduction in prices of their goods.

❦

Winnipeg Dental Society held its January meeting at the St. Charles hotel and discussed X-rays.

❦

The Regina dentists held their annual meeting January 10th at which Dr. A. S. Gorrell read a paper.

❦

The rural schools of Manitoba are asking for the same dental treatment as is now given in the cities.

❦

Dr. C. J. Mahoney has been appointed on the staff of the Toronto Separate school to care for the children's teeth.

Mr. John M. Lee, a third year dental student in the R.C.D.S., died at his home in Kingsville, Ont., January 12, 1921.

⁂

The Royal College of Dental Surgeons has opened a Nurses Dental Register. Dentists who want a nurse can communicate with the office and thus get in touch with dental nurses.

⁂

Are false teeth a luxury or a necessity? Surely they should not be taxed, or if they are, exemption should be allowed upon cheap sets, if there be such things now.

⁂

British doctor declares that beer is excellent for the teeth. How comes it, then, that so many English folk have such poor teeth as compared with Canadians and Americans?

⁂

An American company has introduced a fad into life insurance. This is the Occidental Life of California, which offers to pay $2 on account of the examination or treatment of the teeth of any policyholder by a qualified dentist.

⁂

Since there is no adequate dental service in any of the provincial insane hospitals or penal institutions a deputation suggested that for dental service the director in the Department of Education take charge of both. This was not considered advisable by the ministers.

⁂

During the past year or more Dr. F. J. Conboy has been acting as director of dental services in the Department of Education of Ontario. His services were for one day a week. The department decided to appoint a director for full time service at a salary of $4,000 whereupon Dr. Conboy resigned because he would not accept the appointment for so small a salary.

⁂

The members of the Ontario Legislature will be asked this session to pass a private bill to allow a dentist who does not hold an Ontario license to practice in this province. This is the first case which has reached the private bill stage in the Ontario Legislature in many years. Under the late administration the board of the college was consulted and an agreement reached. Fifteen years and more ago it was quite the regular thing for every person who thought he had gained some rights by practicing illegally in the province to apply for a license. The present administration can hardly grant a license to practice in Ontario especially as the Minister of Education is a member of the Board of Directors and knows there are nine hundred undergraduates in the college who expect to qualify in the regular way.

DENTISTS AND TEACHERS OF THE UNIVERSITY OF MONTREAL MEET AT THE CIRCLE

A meeting of dentists and teachers of the University of Montreal was held at the Circle. The purpose of this meeting was to complete and elaborate upon a constitution of an association of graduates of the university.

The object of this association is to promote good fellowship throughout the university. Mayor Gauthier stated he would give his good will and help this society in any way he could.

The constitution was read by the secretary, Dr. George Pelletier, and agreed upon.

Major Gauthier, in a brilliant speech, spoke of the necessity of a union among all the elders of the university to the benefit of the Alma Mater and to the benefit also of the medical students.

Drs. Dubeau and Nolin also spoke upon the same theme as the latter, and promoted this idea.

Here are the results of the election: President, Dr. Gouin; vice-president, Dr. Clovis Dennis; secretary, Dr. George Pelletier; and councillors, Drs. C. Larue and C. R. Beauchamp.

DENTAL SUITE, large enough for two chairs, with furnished waiting room; $50 per month; 734 Spadina Avenue, near Bloor. 'Phone College 1748.

Dominion Dental Journal

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Original Communications

RURAL HEALTH CARAVANS AND PRE-SCHOOL AGE DENTAL CLINICS

George Kerr Thomson, D.D.S., L.D.S., Halifax, N.S.

In 1885-6, in England, when the question of school dentistry was first given consideration by the British Dental Association, and thirty school dentists were appointed by the Government to provide dental services for the "poor law," as well as the elementary schools, was originated the worldwide oral hygiene propaganda which to-day has assumed such large proportions, and is undoubtedly a most important factor in the public health.

In 1898, in England, the school dentists on duty in these schools formed the School Dentists' Society, which has been such a help to us in our work in Canada and the United States, where in the latter country the work was begun in the same year by the National Dental Association.

The present oral hygiene campaign in Canada may be said to have begun in 1908, when the examination under the authority of the Government, of the teeth of school children in Halifax, and the reading of two papers on school dentistry at the 1908 meeting of this Association at Montreal led to the appointment of the C.O.P.A. as our educational committee. Previous to that date, Dr. Adams of Toronto and other pioneers in this work made an examination of the school children in Toronto, and directed the attention of the Government to the necessity of dental services for them, but without result so far as any provision by the Government being made at that time was concerned. No doubt Dr. Adams' missionary work at that time in this connection bore fruit at a later date, when the school dental services in Toronto, which have been so splendidly developed, were organized, and in which the Ontario Dental Society has played such an important part.

In this connection the wonderful work of Dr. Doherty of Toronto, who practically sacrificed his life in the interests of the public, will never be forgotten. It is quite unnecessary for me to inform you of the great advance in public dental education and school dentistry in Canada which has taken place since 1908, and which is largely due to the work of the C.O.P.A., the biennial report of which has just been received. These reports, which we hear read every two years, seem to be better each time we hear them, and I think we all agree that this last one is the best of all.

The C.D.A., as well as the C.O.P.A., is to be congratulated on the new executive of the latter association, Dr. H. S. Thomson, but we have also been very fortunate in the past in having the voluntary services of the men who have served for years on the executive committee. I do not think we realize how much the Canadian public owes to these men in Ontario who have given so much of their time and energy to this work, and although they will still continue to serve, it is quite time that a paid executive should be employed. In fact, it is time that voluntary work on the part of any members of the profession should be unnecessary. The Government of the country is able to employ officers in other branches of the civil service. Why not in the dental branch of the Public Health and Educational Departments?

With a view to obtaining definite official information with regard to the relationship between the Federal and Provincial Health Departments, the question was asked if any financial assistance could be given the Provincial Health Department by the Federal Department in the same manner as that of the highways. The reply was received that the only financial assistance given, was in the case of venereal diseases, but no suggestion was made that it would be impossible to make an arrangement of that kind. It may be that a recommendation by this association to that effect would be desirable and aid in obtaining such assistance.

It is quite natural that there should be a difference of opinion among the members of the profession with regard to the best method of educating the public and providing services, preventive and otherwise, but no matter how much we may differ with regard to the remedy, we must all realize that it is absolutely impossible for the number of dentists in practice and embryo to overtake the ravages of this most common disease in the world, "tooth decay," and further, it must be admitted that old adage, "prevention is better than cure," applies in this as well as in other diseases, and that a practical system of providing preventive dental services would be a better remedy than any in existence at the present time.

In England there is at present a difference of opinion among the school dentists as to the employment of "dental dressers."

In the United States and Canada we have a difference of opinion with regard to the employment of dental hygienists, although it has been conclusively proved that so far as preventive dentistry in the schools is concerned, the system originated by Dr. Fones in Bridgeport, and now provided for by legislation in over fifteen of the United States, is most practical and valuable. A further development of this excellent system is the suggestion by Dr. Fones in his address in March, 1920, before the Illinois State Dental Society of "Burbanking" (to use his expression), the medical nurse and the dental hygienist, and call her the "public school hygienist."

Last autumn I had an opportunity of discussing this matter with prominent members of the dental profession in the United States, and was impressed with the fact that some of the most bitter opponents of the dental hygienist system in its earlier days are now very much in favor of it. I was also impressed with the danger of the dental hygienists being commercialized, but it does not appear that this disadvantage can compare with the enormous amount of good they accomplish.

In Ontario, Nova Scotia and other parts of Canada we have the "school dentist" with the "school nurse" for assistant, which appears to be an excellent system so far as it goes, but it does not and can never possibly go far enough, for obvious reasons, which have been frequently stated. Personally, I do not think that either the dental hygienists or the qualified dental practitioners with their present limitations will ever cope successfully with the situation. The dental hygienist, as you are aware, is only permitted to remove the deposits and bacterial placques, polish the teeth, and instruct the patient in the home care of them. The practitioner, on the other hand, is expected to perform all the reparative as well as preventive operations which the dental hygienist is not permitted to do; and as stated before, there are not and never will be a sufficient number for that purpose. In New Orleans I had an informal but lengthy discussion on this matter with Dr. Paul

Stillman of New York, Harold Box of Toronto, and Mr. Jenkins of Kolynos fame, in the course of which Dr. Stillman made a suggestion that the professional nurse with a training in practical prophylactic treatment, would be the ideal preventive remedy, this being practically the same suggestion as made by Dr. Fones in March, 1920. This seemed to me the solution of our difficulty in Nova Scotia, providing that the child received preventive services early enough, which would be at the age of 3 or 4 years. Up to the present time, although pre-school age care of the teeth has been advocated and taught, no definite action with regard to the services of the dental practitioners or hygienists in a public way has been taken by the profession or Government authorities. It is only by a fortunate coincidence that we have an opportunity of beginning work along these lines in Nova Scotia this year. Doubtless you remember the wonderfully prompt and generous assistance rendered Halifax by the State of Massachusetts, immediately after the terrible explosion of 1917, the response being so generous that after the immediate relief program had been completed about one-quarter million dollars remained. This balance is now being spent in the establishment of health centres, one of which has already been established in the old Admiralty House, Halifax, which has been placed at the disposal of the committee. Last winter about fourteen trained nurses received a special course qualifying them for public health nurses. In this course were included lectures and demonstrations on oral hygiene and practical prophylactic treatment, by dental practitioners, thus qualifying our public health nurse to provide preventive dental services for the child of pre-school age. This oral hygiene qualification is compulsory, and none other than public health nurses will be employed in the schools or health centres. In this connection it should be understood that Provincial Health Department, the Massachusetts-Halifax Health Commission and the Red Cross Society co-operate, at present the two latter bodies providing the funds. The expense of establishing health centres throughout the province will be borne by the respective counties in which they are situated. So far as Halifax is concerned, the expense will be borne by the Massachusetts-Halifax Health Commission, from the executive of which a letter has been received by our oral hygiene committee suggesting the establishment of a pre-school age dental clinic with each health centre, and requesting our recommendations and co-operation in connection therewith. Our committee now has this offer under consideration, and will recommend that these pre-school age clinics be under the supervision of a registered dental practitioner who will see that prophylactic dental treatment, including the application of nitrate of silver and the insertion of antiseptic cement fillings in the sulci of teeth showing superficial decay, is properly performed by the public health nurse. He, as well as the nurse, will instruct the parents in the home care of the teeth, particularly with regard to the diet, where the use of free-sugar will be discouraged, the nurse seeing that instructions are followed in the homes.

Pre-natal lectures will also be given to the parents.

Of course, it is understood that these nurses will visit the homes and arrange for the attendance of the children at the health centre clinic. In this way the children of pre-school age which heretofore it has been impossible to reach, will receive preventive dental treatment which will enable them to begin school life without the handicap of an unhealthy mouth, under which so many of the children enter school at present. The good accomplished by this method will only be limited by the number of public health nurses with these dental hygienic qualifications who can be trained and employed. In time this will materially reduce the number of reparative operations required, and fewer school dentists will be required than would otherwise be the case. This would not interfere with duties of the public school hygienists suggested by Dr. Fones.

Now, sir, my object in directing the attention of this association to this remedy for the grave situation which exists to-day, is not because we have results to show, or to prove its efficacy, but rather to promote discussion of the scheme, which may result in the adoption of some standardized system along these or similar lines approved by this association.

RURAL HEALTH CARAVANS.

Another opportunity which presented to our committee was in connection with the Red Cross Health Caravans, which for the last six weeks have been operating in Nova Scotia.

These caravans, as some of you are aware, are a method adopted by the Red Cross Society for doing the most good to the greatest number in times of peace, as it did in the late war, and it is expected that owing to the success of these clinics in Nova Scotia, they will be in operation in every province in Canada.

They have attracted health experts from all parts of the continent, and are of sufficient importance to have been visited by Dr. Robertson of the Red Cross, Ottawa, Dr. Fitzgerald of Toronto, and Dr. Wincent of the Rockefeller Foundation, with a view to general adoption, and possibly endowment by the Rockefeller Foundation.

They consist of motor ambulances fully equipped for operations of all kinds, but particularly those of the mouth, nose and throat. Three ambulances, two motor lorries, one moving picture lorry equipped with latest type of picture machine, which is also used for lighting operating theatre—comprises one unit. Three medical specialists, with five public health nurses, and one dentist with public health nurse as assistant, accompanied each unit.

Efforts were made to obtain two of the motor dental ambulances used in the late war by the American army, but as these were not available, two international ambulances were borrowed, which, although not equipped like the Preparedness League ambulances, were found quite efficient for the purpose. It was at the request of Lieut.-Col. F. V. Woodbury, son of your president, that arrangements were made for sending a qualified dentist with each unit at the expense of the Red Cross, and the results of their work show that the scheme of travelling dental clinics for the outlying districts of Canada is most practical and efficient.

We were very fortunate in obtaining the services of two of our committee who are most prominent ethical practitioners and deeply interested in the propaganda.

One of them, Dr. F. W. Ryan, is here to-day, and will, no doubt, give us an interesting account of his work in this connection. We are so impressed with the value of these health caravans and pre-school age dental clinics, that we think it desirable that this association should pass the following resolutions:

1. That this association approve of the organization of pre-school age dental clinics and travelling dental ambulances in connection with the public health or educational departments throughout Canada.

2. That the Oral Hygiene Committee of this association keep in touch with the Federal and Provincial Departments of Public Health and co-operate with the Provincial Hygiene Committees in systematizing and standardizing the public dental services so that the same method may, as nearly as possible, be adopted throughout Canada.

DISCUSSION.

Dr. F. W. Ryan (Halifax): Mr. President and Gentlemen: I did not know until this morning that my name was on the programme to open the discussion on this report. However, I am sure we all approve the work which is outlined in it.

There are many things I would like to discuss in connection with this report on education. I am not sure just what this Educational Committee are doing; whether their work is the education of the dentist or of the public, or of both. We have seen how necessary it is—I am thinking particularly of Dr. Seccombe's address the other day—that the education of the dentist should be more extended.

It has often occurred to me that in the combating of infectious diseases three primary considerations are involved: the matter of infection itself, the number and virulence of the organisms, and the resistance of the tissues. Now, hitherto we have been largely basing our methods of practical treatment on those factors which relate to the virulence and the number of the organisms. This involves instruction along both pathological and bacteriological lines; and, as our essayist has said, we have not accomplished very much in that direction. We are teaching prophylaxis; we are teaching cleansing; our slogan has been "the clean tooth doesn't decay," and we have now got to the point where we are almost educating a new profession called hygienists to look after that particular branch of our work. We all feel that it has not accomplished or is not likely to accomplish the thing we intended it to accomplish. When we think of the number of children that are born every year and of the number of teeth that they have; that in each child the surface of each tooth must be scoured and brushed and polished—well, the task seems herculean. Now we are beginning to turn to the other phase of the matter—the resistance of the tissues to the attacking forces. If we can increase the power of resistance of the tissues so that the attacking forces cannot penetrate, we shall accomplish what we tried to do on the other scale. From the addresses of Dr. Seccombe and Dr. Husband it looks as if we can accomplish a little more by paying attention to the matter of diet—to fundamental principles rather than to the physiological, pathological and bacteriological phases of the question. It seems that way, anyway.

So much for the education of the dentist; now, as to the education of the people. I know that I was put here to talk about those caravans. Anyone who is at all connected with the public health movement cannot help feeling that the people are asking for information. They are saying: "What shall we do? How can we keep our children's teeth in proper condition?" It is simply a matter of the education of the people; the imparting of information to them as to what they should and should not do. But in connection with these public health clinics and propaganda, while it is desirable to have clinics and schools and so on, to relieve people of pain and to do the actual work, it is not of much use to educate people whose habits in life are well established. The greatest good is accomplished by getting at the child in the school or at the preschool age and get him accustomed to the dental services, to the chair and the ministrations of the dentist and that sort of thing. That would go a very long way toward relieving them from the effects of fear and causing them to acquire good habits. Now, that is what the health caravans have been doing in Nova Scotia. Of course, the work is managed and financed largely by the Red Cross Society. The health of the people is undoubtedly a Governmental function; there is no question about that. It is the duty of a Government to look after the health of the people whom they govern. Unfortunately, however, many of our Governments have very little money or think they have; or they have other ways of spending it that are more profitable, they think, than expenditure made in the interests of public health. They are not sufficiently educated —that is another thing; we ought to educate the Governments.

When the Red Cross Society came to demobilize their organization at the end of the war, and when they had regard to the conditions disclosed in connection with the recruiting of soldiers and to the fact that large numbers of men were incapable of defending their country and their families; when they realized the amount of suffering and distress that had been occasioned by the war, those who were in charge of the Red Cross organizations of the different countries—United States, Japan, Great Britain, France and Italy—decided to see if something could not be done with a view to using all this great machinery for the betterment of the people and the general improvement of health conditions. Representatives of these five national Red Cross Societies met in France and decided to approach an international committee that had been established years before at the Congress of Geneva to see whether something of this kind could not be done. Eventually they did confer with this committee, and at their first meeting with them they found, strange to say, that the committee had forwarded a communication to them containing suggestions along exactly the same line—that the machinery and power and forces of the Red Cross Society should be used in times of peace as well as in time of war. It was found that this international committee could not take up this work in time of peace, chiefly because, in the first place, it is a universal and neutral organization and could not work for any particular nation; their energies were for the whole world. So it was, I understand, that the League of National Red Cross Societies was formed at Geneva. When they were there they had a great meeting—I think that about thirty different nations or governments are in the League now—and the result of their deliberations was the adoption of a peace programme for the activities of the Red Cross, principally to promote the general health of the people. Their primary object was to restore the vitality of the Red Cross Society in order to raise money for the assistance of all their activities that made for the public good—Victorian Order of Nurses, child welfare, tuberculosis leagues, and so on; the Red Cross will abundantly assist them, financially and in every other way.

Nova Scotia was one of the first of the provinces to take this work up through the adoption of these health caravans that travel through the more remote districts carrying with them the blessing of relief from suffering, but more particularly teaching the people how to conserve their natural health. This work which is being carried on through the health caravans in Nova Scotia is likely to be adopted, as Dr. Thomson says, in many other places. Services of an itinerary nature have on occasions been rendered to the people of some parts of the country, but never, so far as I know, on such an extensive scale as the work which is now being carried on in Nova Scotia.

This caravan comprises a complete hospital outfit with tent beds and all the necessary paraphernalia—largely borrowed from the army stores of the Canadian Government, supplemented by such instrumetns and machinery as each specialist might want in his particular line. They are loaded into these ambulances and carted from one place to another.

We were particularly struck with the anxiety of the people in these outlying districts to receive benefit and instruction from the caravan. We did follow the line of railway, in a sense—that is, we were always coming back to it; but we would go to the little villages and hamlets some distance away, set up our hospital in a schoolhouse or hall, whatever place could most conveniently be found to suit our purpose; and the people would come to us in droves, sometimes from dozens of miles away. In many instances we found large numbers of people with their families sitting on the steps waiting for us.

Of course, the thing that appealed to me particularly was the dental service; that was my particular sphere. As Dr. Thomson said, we had six nurses. One was assigned to me, and besides, I had a boy-scout to run errands and do various things for me. Little children would come in in fear and trembling; it struck me that the first thing we needed to do was to allay their fear in every possible way. Of course we can do a great many things now without pain by injecting local anaesthetics. These children would come in and I would take out their teeth, where necessary, without hurting them. I cleaned their teeth, rubbed nitrate of silver over the surfaces of their first-year molars without hurting them, and so on, and the little chaps would get out of the chair smiling. The result was that the next little chap in turn would come up quite cheerfully, and soon they were crowding to get into the chair. That is the spirit that we need to cultivate. I found in one or two cases that if the first patient did not come off quite so well; if the tooth hurt or something like that happened, the result was a damper on the whole proceedings while we were at that particular place. So I took the precaution not to hurt the first patient. That is, if I found that the case required treatment which would hurt, I would put him off; tell him I had not the right medicine just now; then bring in another and keep on until I got two or three patients whose treatment did not hurt them. The elderly people we operated on only to relieve pain; if they wanted more than that they were told to go to their regular dentist; that this was not for them.

After we got through with the children we would give them a toothbrush and one of the pamphlets issued by the Canadian Oral Prophylactic Association on the care of the teeth. These pamphlets proved to be of splendid service. We were bountifully supplied with them, and nearly every person who left the chair got one—and a great many also who did not leave the chair. Wherever we held meetings at night the Scouts would stand at the door and present these things as the people went in and out; so they were pretty well distributed over the western part of Nova Scotia.

The other clinic that approached the dental clinic in practice and so on was the removal of adenoids and tonsils for children. One specialist would deal with as many as fifteen or twenty cases of adenoids in children in a day; I think fifty patients was the largest number I ever had at any one clinic. That was in parts of two days, but ordinarily it ran from twenty to thirty patients each day, or a patient every ten minutes. You cannot do very much permanent work. You can do a lot to relieve the patient, and that kind of thing; but the point was the education of the people. That is what we were instructed to do, and we did it all the time—talk, talk, talk. At night after the clinic was over, some time between four and five o'clock, all our paraphernalia would be packed up in the boxes and loaded on the van ready for the start in the morning. Then our moving picture show provided entertainment for the people in the evening—with more talk; talk all the time. Some evenings we would have two or three different meetings in different little hamlets. The instruction afforded by the moving pictures was a valuable feature of the work; they appealed strongly to the people in the outlying districts, where moving pictures are not as common as they are in the larger towns; and wherever they were shown the halls were crowded.

The dental clinics were particularly attractive, with many thanks to the Canadian Oral Prophylactic Association. They were put on every night; they were instructive as well as entertaining—so much so that after we had been in a given place for two or three days we began to get appeals from towns ahead asking us to stop with them. Of course, to a large extent we had to stop where we were told to stop. But just as I was leaving it—I was there for three weeks—the towns began to celebrate as we came in: the children would be out waving flags, and so on; so we were getting quite popular. I suppose it is not quite so popular since I left; it was at that time, anyway.

In the evenings, as I say, we would have these moving pictures and on Sundays we would go out through the towns and speak in the Sunday schools and churches with the idea of educating the people. Everywhere we were received with confidence, apparently; certainly the people were glad to see us. I do not know of any better means of practically educating the people to the necessity of protective and preventive measures than through the travelling rural health caravan. There are many other things I would like to have said, but I feel that my time is up. I thank you.

Dr. Thomson: Is it the intention of the Association to take any action on the recommendations made with regard to that matter?

The President: Do you move their adoption?

Dr. Thomson: I do.

The President: It would be hardly fair to pass a resolution with only a dozen here. I suggest that the matter be referred to the proper committee for report. Is that agreeable to you, Dr. Thomson?

Dr. Thomson: Certainly.

Dr. Thomson's paper and the recommendations contained therein were duly referred to the proper committee for consideration and report.

DR. THORNTON'S REMARKS CLOSING THE DISCUSSION ON "THE PROS AND CONS OF FIXED BRIDGE WORK" IN THE FEBRUARY ISSUE, PAGE 53

Dr. Thornton: With regard to the patient mentioned by Dr. Fleming in the latter part of his remarks, it may be true that there is an isolated case of that kind here and there. Since coming here I met a lady whose hospitality I had the pleasure of enjoying a few years ago. Talking of this lady, a friend of mine said: "She is the cleanest woman I ever saw; her house is the cleanest you could find." Now there are persons like that who are scrupulously clean, and the case mentioned by Dr. Fleming may be one of that class. I do not know how you would make a fixed bridge if it was for the posterior part of the mouth. What we call sanitary bridges, which do not touch the alveolar crest, may be made so that a piece of rag may be drawn from one side to the other and cap polished in that way. But certainly fixed bridges, as they are made and as we see them in the mouths of patients, are not cleanly, and I think the general consensus of opinion will endorse that position.

Now, Dr. Nolin said during the course of his remarks that there were cases in which a fixed bridge possibly saved a man's life. I cannot conceive of any such case as that. I wish it had been possible for you to see two removable bridges which were in the mouth of one of the members who was in attendance at this convention, but who had to go home last night. He had lost a lower molar on each side—a first molar or second molar on each side. Which one of you would have the tooth anterior and posterior to the vacant space ground down in order to supply that one tooth? Yet this man is one of the most scientific men in the country. He realized that his teeth were drifting a little and producing traumatic occlusion, so he constructed for himself two removable bridges along the line of the technique suggested by Dr. Nesbitt of Boston. I said to him within the last seven days: ''How long did it take you to become accustomed to them—until they were comfortable?'' He said: ''They were comfortable from the time I first put them in; I am not conscious that they are there; I bite on them as comfortably as possible.'' Now, is that not better practice—to put in removable pieces that can be taken out and cleaned, without the destruction of any serviceable tooth tissue? Is that not better than putting in the best kind of fixed bridge work? I believe it is. If you have a missing lateral in the anterior part of the mouth and you can make one of those half crowns, casting it with a shoulder somewhat along the line of the Carmichael attachment, I believe that a fixed piece can be kept clean there because there is no occlusal surface involved. But in the posterior part of the mouth I say it is next to impossible to do that. I cannot conceive of a place where it would not be better to put in a removable bridge than a fixed bridge. Let me say that we owe this to the inception of bridge work: that it has brought about a perfection of technique which, perhaps, we should never have had but for the advent of fixed bridge work. It brought with it another advantage: that men in the dental profession commenced to get a fee commensurate with the service which they rendered. The time has now come when the members of the profession can get just as good a fee and adopt a better plan of practice. The public to-day recognize the fact that dentistry is necessary and that it should be paid for. At first bridge work commanded a high fee because so few men were doing it; and the size of the fee made the wealthy people think that they were getting superior service.

Most of you know Dr. Arthur Black; he is not a man who could be easily imposed upon. Three years ago I was attending a meeting in Pittsburg. In company with Dr. Black I was walking to the institute where they do the research work. He opened his mouth and said: ''How do you like my bridge?'' I could not see any bridge, but he had one in his mouth. This was its history: Both upper centrals had become devitalized through apical abscesses. His father treated them; one yielded to treatment, but the other did not. Other men gave him treatment, but still that abscess did not heal. Finally the tooth was extracted; and he put a bar of gold on the lingual side and attached it to the other devitalized tooth so that he had his own tooth as a bridge. "For years," he said, "I have had in the sole of my foot a little boil. Pus would accumulate there; I would open it and it would give me no more discomfort for a time; then perhaps in three or four weeks it would come again. That has been going on for years, but since I have had this tooth extracted and the socket curetted, this trouble has disappeared." A few months ago I was at a meeting of the Pennsylvania Society in Pittsburg, and Black was there. I said: "How about your bridge and how about the boil in the sole of your foot?" He said: "I had one recurrence of it about three weeks afterwards, and I have never been troubled with it since." Now, he is not a quack; he is a man who is able to draw a fairly logical conclusion.

I do not take the position that I do because I am a better operator than anyone else. Someone has referred to standing or distinction or something of that kind. Well, let there be no more of that so far as I am concerned, for I am one of the very humblest of men. But I have had a chance to observe the results following from mouth infection. I have seen deaths occur from this cause. I have seen scores of people who were crippled; and I have seen many of these restored to health by the extraction of teeth and the curetting of sockets. I know what I am talking about when I say that it is one of the hardest things any man can undetrake in the mechanical line to make a crown that will fit under the free margin of the gum. If you make such crowns at all, do not let them touch the free margin of the gum.

If you give this matter serious thought, you will come to the conclusion that there is no case in which you cannot do yourself and your patient better justice by putting in removable appliances—and not, by the way, one of Shea's appliances; for it requires the destruction of too much tissue; it is complicated, and when it breaks it is hard to repair. I have been in Shea's place many times; I know him very well.

You talk about the man who five years ago said one thing and to-day says another. Well, is that not as it should be? Surely a man should not stagnate. Up in Ontario, where everything is right, a judge was trying a case. He committed it to the jury, and after three hours the jury returned and the judge said: "Are you agreed on a verdict?" The foreman said: "No, my lord, we are not." Said the judge: "Is there any possibility of agreement?" The foreman replied: "I do not know; we stand eleven to one." The judge said: "Well, I am going to send you back. I have no right to dictate to you what your finding shall be in this case, but I want to direct the attention of the one man to the fact that a wise man may change his opinion but that a fool never does." In the light of our present knowledge, with the information that we get through the use of X-rays; with what we know of pathology and of selective capacity and of pathogenic organisms, would we not be fools if we held to the same opinions to-day that we held when Foster Flagg defended the filling of roots with cotton on the ground that experiments with a test tube containing contaminated material proved that the cotton prevented the ingress of organisms? But that absorbent cotton was not in contact with the contaminated material in the test tube; and we know to-day that if you put cotton or creosote in a tooth in contact with putrescent matter it is not very long before the cotton itself is contaminated also. So we are going on from grace to grace and from glory to glory—that is more Scripture!

AN OUTLINE FOR EXAMINATION AND CLASSIFICATION OF MOUTH CONDITIONS

M. M. House, D.D.S., Indianapolis, Ind.

This outline is intended for teachers and to assist the denture prosthetist in making a proper diagnosis and prognosis of the case, in order that he may more intelligently determine the treatment and properly instruct his patients as to what they may expect of dentures in their particular case.

Any combination of the following classifications may be present and must be thoroughly understood by the successful denture prosthetist.

It would be absurd, unjust, and inexcusable for any denture prosthetist to allow patients with unfavorable mouth conditions to expect from their artificial dentures a service as efficient and satisfactory as that enjoyed by other patients who have favorable conditions.

MENTAL CLASSIFICATION.

During consultation relative to denture service, patients should be encouraged to relate their experiences, difficulties, and expectations regarding the service they are seeking. Their mental condition may then be better understood and may be classified as follows:

PHILOSOPHICAL MIND.

1a. Those who have come previous to extraction and have no experience in wearing artificial dentures; such are dependent upon the denture prosthetist for proper diagnosis and prognosis and education.

1b. Those who have worn satisfactory dentures, are in good health and of the well-balanced type who may be in need of further service.

EXACTING MIND.

2a. Those who, while suffering ill health, are seriously concerned about the appearance and efficiency of artificial dentures and, therefore, are reluctant to accept the advice of their physician and dentist and are unwilling to submit to the removal of their natural teeth.

2b. Those wearing artificial dentures unsatisfactory in appearance and usefulness, and who doubt to such an extent the ability of the denture prosthetist to render a service that will be satisfactory that they often insist upon a written guarantee or expect the denture prosthetist to make repeated attempts without an additional fee.

HYSTERICAL MIND.

3a. Those in bad health, with long neglected pathological mouth conditions, who dread dental service and submit to removal of teeth as a last resort, and are positive in their own minds that they can never wear artificial dentures.

3b. Those who have attempted to wear artificial dentures, have failed, and are thoroughly discouraged, are of the hysterically nervous temperament, very exacting, and will demand from artificial dentures efficiency and appearance equal to that of the most perfect natural dentures.

INDIFFERENT MIND.

3c. Those who are unconcerned regarding their appearance and feel very little or no necessity of teeth for mastication. They are therefore, non-persevering, and will inconvenience themselves very little to become accustomed to the use of dentures.

PHYSICAL CLASSIFICATIONS.

Tone and development of the muscles of mastication and expression.

1. A case in which degenerative changes have not occurred.

2. A case where approximately normal functions have been preserved by the wearing of artificial dentures.

3. A case in which a subnormal condition has resulted from the absence of natural or artificial dentures or from the wearing of inefficient artificial dentures.

BONY STRUCTURE—PHYSICAL SIZE.

1. Large upper or lower, affording the greatest possible advantages for stabilizing the dentures.

2. Medium size, affording less advantage for stabilizing the dentures.

3. Small size, presenting much difficulty in stabilizing the dentures and affording much less efficient service.

Note.—Any mouth may present one class upper and another class lower.

Arch Form. 1. Square type. 2. Tapering type. 3. Ovoid type.

Note.—Any mouth may have one class of upper and another class of lower arch form.

PHYSICAL FORM OF ALVEOLAR RIDGES.

1. With contours favorable to the aesthetic and efficient adaptation of dentures.

2. With contours presenting minor difficulties to the aesthetic and efficient adaptation of dentures.

3. With contours which demand surgical interference to permit of aesthetic and efficient adaptation of dentures.

SOFT TISSUES.

1. Normal uniform density of investing membrane of 1 mm. or 2 mm. thickness over the area to be covered by dentures.

2a. Hypertrophied tissue conditions resulting in thickened investing membrane which may be efficiently controlled by proper denture form.

2b. Entire investing membrane very thin and easily irritated; may be controlled by proper denture form.

3. Hypertrophied tissue conditions resulting in excessive thickening of investing membrane which necessitates surgical interference.

BORDER TISSUE ATTACHMENTS.

Upper. 1. High. 2. Medium. 3. Low.
Lower. 1. Low. 2. Medium. 3. High.

MUSCULAR ATTACHMENTS.

Upper. 1. High. 2. Medium. 3. Low.
Lower. 1. Low. 2. Medium. 3. High.

THROAT FORM.

1. Large and normal in form with the immovable tissue of the soft palate extending posterially from the hard area from 5 mm. to 12 mm., at which point the curtain of soft palate becomes movable with a decidedly large range of movement. This type is usually found in a large type of mouth.

2. Medium and normal in form, having an immovable tissue approximately 3 to 5 mm. posterior to the hard area.

3. Small and little or no immovable tissue posterior to the hard area, the curtain of movable soft palate turning down abruptly within 2 mm. of the junction of hard and soft areas. Such mouths are usually without tuberosities and present a difficult problem.

AI-SALIVA.

1. Normal in quantity and quality, offering a favorable condition.
2. Abundance of semi-viscid ropey saliva.
3. Excessive amount of extremely viscid saliva.

THE FOLLOW-UP TALK ON CARE OF CHILDREN'S TEETH

W. C. Davey, D.D.S., Morrisburg, Ont.

The development which marked human civilization during the latter portion of the nineteenth century was largely commercial. The human mind was concentrated on securing those things which might be considered of pecuniary advantage. To such an extent did the god of gold obscure our vision that the non-industrial side of life was largely forgotten.

The present century is being marked by a revolution of the individual's idea of his relationship to society. Our churches preached a self-centered religion. The greenish-yellow flames of the nether region scorched our feet and the sulphurous fumes reeked in our nostrils, while above "the bright blue sky" Birks' and Ryrie's stores would appear like a candle at noon on a July day, and the Metropolitan Opera Company like the croak of a frog to Sousa's band. In short, our clergymen endeavored to scare hell out of us and heaven into us. To-day, however, the progressive idea is that of individual purity and social service. The comprehension of woman's capabilities and lawful rights have granted her the franchise. The question of Cain, "Am I my brother's keeper?" has been answered in the affirmative, and this northern half of the Western hemisphere has gone far towards total prohibition. The call of our brethren in far-off lands for relief against famine, plague or heathenism relieves the widow of her mite and the millionaire of his gold. Truly, the twentieth century individual finds himself set in an epoch of the world's history where selfish individualism is dimming before the rising sun of unselfish recognition and of devotion to the rights and interests of others.

The world unrest to-day, whether evidenced in Russian Bolshevism, Irish rebellion, Capital and Labor difficulties or other disturbances, is but an indicator that the bauble of our immediate past civilization has broken and in its place the world desires to find something more substantial and satisfying.

We have intimated that society to-day is taking a keen and serious interest in the moral and social and physical welfare of its individuals. Witness our legislation, enacted or prospective, for workingmen's compensations, mother's pensions, old age pensions, child welfare, etc., and the establishment by the Federal Government of a Department of Health.

I wish to speak to you to-day for a short time on one phase of public health, viz., the establishment of efficient machinery to take care of the teeth of our school children.

I need not here dilate upon the benefits of good dentistry. The ladies of this Institute believe in it. You were instrumental in organizing some few years ago a dental and medical inspection in our local schools. You are one of the units of that great provincial institution which gave at their annual convention in Toronto no uncertain sound as to the volume of public sentiment behind the movement for dental inspection in the schools throughout the length and breadth of our province.

Public sentiment is the greatest factor in securing legislation, and the Hon. Dr. Cody, the then efficient Minister of Education, gave to your central body assurances that steps would be taken to secure a survey of the province. This survey is at present in progress throughout the province and is being done gratis by the members of the dental profession. The old saying, "You cannot look a gift horse in the mouth," holds true here. As I've said this work is being done gratis and the men consequently cannot be hurried and the inspection, for that reason, is covering a considerable length of time.

A want is created by showing an individual that he is to obtain some advantage from a certain procedure, e.g., a lady thinks if she possessed a certain silk waist she would look better or be dressed as well as some one having ten times her purse, immediately there is a want created. As we have stated, once a want is created, a public sentiment aroused, it is an easy matter to secure legislation which will make that want a possibility.

It was thought that if the statistics were collected, showing the general condition of the children's mouths throughout the province, that the people would see the benefit of establishing machinery to secure regular examinations and treatment. Our examination, however, will only create a want with those parents who are conversant with the advantages of good dentistry and baneful results of neglect. Even in this enlightened age there is a large precentage of the people still ignorant in this respect and there is much work to be done in disseminating information.

There are several ways in which this may be done. First, by public lectures illustrated with slides or moving pictures· second, by the distribution of pamphlets; third, by means of the public press. The Curtis Publishing Co. have a series of short articles prepared for the public. These may be obtained by any community gratis. The only stipulation is that each story shall be printed in toto and that they are not used for advertising.

Organizations such as yours, which are seeking to be of public service, could find a very useful sphere of operation by undertaking to have this series of article printed in the local papers, and by arranging for public lectures.

As I have mentioned, your central organization was instrumental in securing the survey of the province which is now being made. When this has been completed and the results made known, you will then have in your hands facts which should go far towards backing up a demand for the permanent establishment of dental inspection and clinics. Perhaps the best way to organize for this campaign would be to have each local society in a county pass resolutions recommending the establishment of inspections and clinics. The matter could then be taken up by the county organization and forwarded to the Provincial Association which could deal with the Government.

Knowing the ability and energy of the members of the Morrisburg branch of the Women's Institute, I see no reason why this province-wide movement should not be organized from here.

We will not attempt to enter into the lengthy discussion of the physical or moral advantages of dental treatment to the individual. It has long been recognized that when a person becomes a public menace in any respect the State has a right to interfere with what might ordinarily be termed his personal rights. A child with a diseased oral cavity harbors millions of germs, some of them of the most dangerous kinds. In breathing, coughing, and sneezing these are scattered through the air, which thus becomes contaminated and a menace to the health of the other children, and the right of the State to interfere.

In Chicago during a scarlet fever epidemic the usual quarantine precautions were observed. Upon return to school of those who had recovered from the disease it was found that fresh outbreaks occurred. It was only when each child was compelled to have his mouth put in a thoroughly sanitary condition that these recurrences were prevented. The average number of contagious diseases at St. Vincent's Asylum in Boston was about a hundred. After a Dental Infirmary was established this number was reduced to two. These two illustrations show, unquestionably, the importance of the mouth as a disease harborer and distributor.

Another phase of the question to which we wish to draw your attention is the economic saving to society of vast sums of money. A few years ago it was estimated that re-education cost New York City $1,037,696. 80 per cent. of this was attributed, directly or indirectly, to defective teeth. In the city of Bridgeport, Conn., in 1914 the cost for re-education was 40 per cent. of the total cost of education. Five years later, during which time a vigorous oral hygiene campaign had been operating, it was found that this percentage was cut down to seventeen.

Let us apply these figures to our own county, our present budget for educational purposes in Dundas is approximately $100,000 annually. Supposing our case to be parallel with that of the city of Bridgeport our expense for re-education is $40,000, whereas if our children were under a regime of thorough prophylaxis, our cost for re-education would be reduced to $17,000, or a saving of $23,000.

With the proposed consolidated schools throughout our province, the efficiency of the dental nurse and dental inspector would become much more effective than is at present possible in our small widely scattered rural schools. Conditions then would more nearly parallel those of the city and town schools.

But the cost of re-education is not the only economic saving accomplished by the introduction of a thorough system of oral hygiene into our schools. Each year of school life saved to the boy or girl means that same time added to his productive period. Taking the estimate, therefore, for the number of years thus saved in re-education and multiplying that by the average earning capacity of the individual we find the sum amounts to almost unbelievable figures and the cost of re-education sinks into insignificance.

We have endeavored to show you that this movement is in accord with the spirit of the age. We have supposed that its individual physical and moral advantages are known to you. We have made the reason for State interference clear and have demonstrated its economic advantage. We have intimated to you the sphere in which your influence would be of advantage. Not necessary at this time to discuss the details of the organization of dental inspection and clinics as that work is better left in the hands of experts. What we urge on you at the present time is that you exhibit a lively interest in the movement and exert your influence to bring about its realization.

WHEN IS THE DENTIST LEGALLY JUSTIFIED IN ASKING A FEE FOR A HOUSE CALL?

A. M. Hord, D.D.S., Toronto.

Case—A girl of 11 years, acute alveolar abscess on lower right first molar. Unable to get history on account of age of patient and the fact that she was accompanied by a girl of about the same age. As it was about 5.30 p.m. and imperative that the tooth should be extracted at once to relieve suffering and obtain drainage, a local anesthetic was used.

The following morning I was called to the phone and informed that the patient had bled practically all night and was still bleeding. I called at the house and checked the hemorrhage. I called the following day to ascertain the condition of the patient and found a case of septicaemia. The medical adviser had been called but had not as yet arrived.

I called the next day to find the case progressing favorably. Questions—

1. When is a dentist justified in making a house call professionally and receiving for same a suitable remuneration?
2. Is he justified in calling voluntarily and how often?
3. Is he justified in calling after a medical adviser has the case in charge?
4. Is he justified in treating a secondary trouble or complication when called to treat a specific ailment? That is, should he treat a case of septic poisoning when he is called for treatment of hemorrhage, etc.?
5. Should a dentist have as much right to following whatever treatment he considers necessary to the welfare of the patient whether that treatment be in the dental office or at the residence of the patient?

Will some reader express an opinion on these questions?

THE RETIRING PRESIDENT OF THE TORONTO DENTAL SOCIETY SENT THE FOLLOWING EXTRACT TO THE MEMBERS

Stop and think.

The average life of a man is forty-five years. After forty-five years comes a million years. No matter what your ideals, your profession, or your desire for wealth may be, you must meet the million years.

The big question to ask yourself is this: Will your conduct in the forty-five years warrant a great deal of consideration in the next million? All you will have in the next million years is your personality. By personality is meant character, ideals and the record of good done in the world. Will your personality be worth taking?

After all, when the threshold of the million years comes your only passport, your only substance will be life as you have lived it.—*Life.*

Dental Societies

CANADIAN DENTAL ASSOCIATION

REPORT OF EXECUTIVE COMMITTEE.

DR. GRANT submitted the report of the Executive Committee, as follows:

Moved by Dr. Webster, seconded by Dr. Fleming, that Toronto be the next place of meeting for the Canadian Dental Association.

The following nominations and appointments were made for the different officers and committees:

President.—Dr. Woodbury, Dr. H. F. Whittaker.

1st Vice-President.—Dr. Sydney W. Bradley, Dr. Harry Abbott.

2nd Vice-President.—Dr. Emery C. Jones, Dr. G. K. Thompson.

Chairman of Executive Committee.—Dr. F. J. Conboy.

Secretary-Treasurer.—Dr. E. A. Grant.

Finance Committee.—Dr. J. Bothwell, Dr. A. E. Webster, Dr. Fleming, Dr. R. G. McLean, Dr. Wallace Seccombe.

Committee on Arrangements.—Dr. W. A. Black, Lt.-Col. W. G. Thompson; with power to add.

Committee on Legislation.—Dr. W. D. Cowan, Dr. Bush, Dr. Clay; and the Professor of Jurisprudence of each Dental College in Canada.

Oral Hygiene Committee.—Dr. F. J. Conboy, Dr. Wallace Seccombe, Dr. Harry Thompson, Dr. J. A. Bothwell, Dr. George W. Grieve. The above Committee is recommended to add the Secretary of each Provincial Hygiene Committee where such exists. In provinces which have no Hygiene Committee the Dental Board of the province should be asked to appoint a representative.

Committee on Dental Research.—Dr. Wallace Seccombe, Dr. R. Gordon McLean, Dr. Emery C. Jones, Dr. Bush, Dr. Bagnall; with power to add.

Committee on Foreign Relations.—Dr. A. E. Webster, Dr. Woodbury, Dr. Eudore Dubeau, Dr. H. F. Whittaker, Dr. Wallace Seccombe.

Programme Committee.—Dr. R. Gordon McLean, Dr. Percy Moore, Dr. J. A. Bothwell, Dr. Gausby, Dr. W. B. Amy.

Committee on Dental Education.—Dr. Woodbury, Dr. Dubeau, Dr. Seccombe; with power to add.

The Executive Committee would like this Association to pass a resolution requesting the Committee on Legislation to support to its utmost capacity any effort which any provincial committee may make to improve the legislation of that province regarding dental matters, and to bring in a report at our next meeting setting forth a plan whereby the different Provincial Dental Acts may be made more uniform.

The Report was considered and adopted clause by clause.

ELECTION OF OFFICERS.

In the report of the Executive Committee, Dr. Woodbury and Dr. H. F. Whittaker were nominated for President. Dr. Woodbury retired in favor of Dr. Whittaker, and Dr. Whittaker was duly declared elected as President of the Association for the ensuing term.

Dr. Sydney W. Bradley and Dr. Harry Abbott were nominated for 1st Vice-President. Dr. Abbott retired in favor of Dr. Bradley, and Dr. Bradley was duly declared elected.

Dr. E. C. Jones and Dr. G. K. Thompson having been nominated for 2nd Vice-President, a ballot was taken. Drs. MacSween, Hodgson and Graham were appointed as scrutineers. As a result of the ballot, Dr. Jones was declared elected, the ballot standing: Dr. Jones, 35; Dr. Thompson, 20.

The other appointments as named by the Executive Committee were duly approved.

DR. FLEMING: According to the Constitution, certain officers of the provincial associations are, by virtue of their office, made members of the Executive. The provincial associations meet annually; this organization meets every two years. Are these officers of provincial associations to remain officers of this Association for two years, or at the expiration of that one year do they drop out in favor of their newly elected officers?

DR. WOODBURY: The idea is that the members of the Executive will be largely members of committees and will hold office only as long as they are provincial officers.

DR. FLEMING: Some of these officers are on committees outside of the Executive.

DR. WOODBURY: Yes.

DR. FLEMING: I think my name appears on two such committees, but you see I cannot act on them if my interpretation of the Constitution is correct. I simply wanted to know what was the real meaning of that clause in the Constitution.

DR. CONBOY: Each provincial association has authority to send a representative—one for the first fifty and another for each additional hundred, so that the local societies can take care of that by electing as one of their representatives the President who is stepping out.

A MEMBER: One difficulty about that is that in the case of an association which meets next July, for instance, you may have a space in between when you are neither a member nor anything else.

DR. CONBOY: Of course, one man will hold office until his successor is appointed.

DR. BUSH: It is also to be remembered that the Executive is composed of a number of men who are not members of the Executive by virtue of being members or officers of local associations, so that in any case there would still be enough on the Executive to carry on the work. Should it so happen—this, of course, is only a private opinion of mine—that a member who is on the Executive by virtue of his being an officer of a local society should not be an officer in that society at their next meeting, then it would be up to the chairman of the committee or the committee itself to replace him by some other person. Just at the moment that is the only way I see out of it.

DR. WOODBURY: It is not necessary for a committee man to be a member of the Executive Committee. The re-election simply makes a man a member of the Executive; it does not make him a member of a committee; so he can remain on the committee as a member appointed, even if he is not on the Executive.

A MEMBER: A member of the Finance Committee must be a member of the Executive.

DR. PROUDFOOT: I understand that the Finance Committee comprises five members, three of whom form a quorum. I understand also that seven members of the Executive may transact business, but they have to refer to the Finance Committee for their approval before there can be any expenditure of money. I do not think that the Executive, through the seven members who may carry on business, should be handicapped by being obliged to secure the approval of the Finance Committee in this respect. If seven may transact business, they should be in a position to do so in every sense of the word, and to make any necessary expenditure of money.

DR. WOODBURY: We recognize that there are a number of weaknesses in the thing, but I think it would be inadvisable to take the question up now and discuss it. At the coming meeting of the Executive these matters can be threshed out and a solution reached, if possible, for each of the difficulties suggested.

Dr. Conboy: I move the adoption of the Constitution and by-laws.

The motion was duly seconded and carried.

WESTERN UNIVERSITY, CHENGTU, WEST CHINA

The President: The dental and medical profession have organized in Chengtu, China, a great university wherein there has been established a dental faculty as well as a medical faculty. Dr. Webster will take a few moments to say a word or two with reference to it.

Dr. Webster: Mr. President and gentlemen: We owe to all nations of the world, and particularly to those whose people have not had the benefit of the practice of dentistry as we have it on this continent, a certain amount of effort in their behalf. With that idea in view, some of the members of the profession joined with the medical profession and the nursing profession in the establishment of dentistry in Chengtu, West China. There is there established a great university known as the "Western University." It is a union university, non-sectarian, established for the purpose of giving a general education to the Chinese, in their own language, in medicine, dentistry and nursing. The necessary knowledge or instruction in these professions is not set forth in any text-book or in any language; the people of this university are translating all the Chinese into modern scientific language. We have had almost for the past twenty years representatives of Canadian dentistry in that university. Some of you know Dr. Lindsay, who has been out there for about twenty years; Dr. Thompson, Dr. Mullett, and many other men of that character. We have these three men in the university at Chengtu, practicing dentistry, establishing a faculty of dentistry with a course of six years. Each Chinese boy has to take a course of that length before he is made a graduate in dentistry. Their educational standard is high; their equipment is meagre. These men have been ingenious enough to employ the Chinese to make their tooth-brushes, tooth powders, and toilet preparations of that character.

About a year ago, perhaps a little more, the medical profession established an organization to assist in placing these three professions on a sound footing in that university, and a sufficient fund is to be collected to equip a suitable building for the teaching of dentistry, medicine and nursing and to put the imprint upon the Chinese nation of the standard established in the practice of these three professions in Canada. That is all I have to say about it; you will be called upon sometime and asked if you will make a donation in assistance of this work.

COME TO THE CONVENTION

The fifty-fourth annual convention of the Ontario Dental Association will be held May 2nd, 3rd, 4th and 5th. Each year it becomes a more important event to the profession at large. The making of the convention into a definite teaching institution through progressive clinics has been most successful, as is proven by the increasing attendance each year. Even though you may not accept the entire procedure as given, enough may be adapted to your practice to make your attendance well worth while.

The public expects its dentist to be up-to-date in his ideas and methods of practice. A dentist was discovered—the term "discovered" is used advisedly—in an Ontario village, who was graduated over twenty years ago, and in the meantime had neither subscribed to a dental journal nor attended a dental convention. He was firmly convinced that "new-fangled fads" would not go with *his* people. He was also much embittered because the community did not patronize its own dentist, but went scurrying off to neighboring towns for dental attention.

This is an extreme case, but to avoid becoming even a modification of it, be sure to come to the convention this year.

Editorial

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PROPOSED DIPLOMA IN PUBLIC DENTISTRY —CANADIANS ELIGIBLE

The representation board which is the directing body of the British Dental Association passed the following report of a committee:

1. That public dental appointments are rapidly increasing in number and that in the near future a still more rapid increase is to be expected.

2. That the multiplication of these appointments will certainly lead (a) to the institution of some measure of dental supervision and control of various branches of public work, and (b) in consequence to the adoption of a large measure of uniformity in the methods employed, it being already sufficiently obvious that the great diversity of methods at present in operation does not conduce to the efficiency of the various dental services.

3. That the duties of the Public Dental Officers, whether of an administration or subordinate character, call for the

possession of special knowledge in addition to that included at present in the ordinary dental curriculum.

4. That whilst it is therefore desirable that all Public Dental Officers should have the opportunity (either prior or subsequent to appointment) of receiving instruction in such special branches of knowledge, it is obviously undesirable that the ordinary dental curriculum should be further overloaded by the inclusion of these special subjects in its scope.

5. That the best means of ensuring that such special knowledge has been obtained is by the institution of an additional qualification analogous to the D. P. H., such additional qualification to be described as the Diploma in Public Dentistry (D. P. D.) and to be registerable in the Dental Register as an additional qualification.

Resolved that the universities of the United Kingdom and all licensing bodies be approached with a request to make provision for the institution of such a diploma and that the examination for the suggested diploma should be open to all dentists who hold a degree or license in dental surgery and who are duly registered in the dentists' register for the United Kingdom or who hold a degree or license admitting them to the register in any of His Majesty's dominions or colonies.

Public dental services are reaching larger proportions in Canada as time goes on. Schools, hospitals, penal institutions, asylums and old people's homes will shortly have dentists attached. This kind of dental service has many special features which are not to be found in private practice. Such services need in addition to professional skill a knowledge of administration, public speaking, economics and general business training. The reports and resolutions quoted do not include a curriculum of study. These are to be presented as soon as the matter takes more definite form.

NATIONAL DENTAL SERVICE COMMITTEE

Mr. B. J. Wood, in moving that the report be received, said it included the report on the training of dental nurses, which had been circulated to the Board. In addition, the committee had had before them Sir G. Newman's Report to the Board of Education for 1919, which, the committee considered, contained very important matters on which the opinion of the Association should be sought. The committee were framing a reasoned criticism of certain parts of it which they proposed to submit to the next meeting of the board. The committee also urged that a uniform and standardized method of charting in public dental service should be recommended to all educational authorities. The importance of co-ordination of the different branches of public dental service work was also being considered and a report on this question would be circulated to the Board before its next meeting.

1. It is desirable that some definite idea should now be arrived at as to the duties to be discharged and the training necessary for the proper discharge of these duties by female workers employed in assisting dentists in public service clinics. The duties may be summarized as follows:

(a) The general supervision and discipline of patients attending the clinic for dental treatment.

(b) The giving of skilled nursing attention to such patients preparatory to, during, and after the administration of anesthetic, both local and general.

(c) The recognition of such conditions and such disease as may be found in children and other patients attending such clinics for dental treatment.

(d) The giving of suitable advice on general and, particularly, on oral hygiene and prophylaxis.

(e) The sterilization and care of dental instruments and appliances.

(f) The mixing of filling materials, the preparation of dressings and mouth washes.

(g) The charting of cases and clerical work.

(h) Visiting the parents.

2. It is evident that the proper performances (a), (b), (c), (d), (e) and (h) of these duties requires acquaintance with the work of the ordinary certified hospital nurse, while (f) and (g), while not requiring such skill, would be more efficiently discharged by a person possessing it.

3. The persons at present available as dental nurses include the following:

(a) Certificated nurses trained for three years in a general hospital.

(b) Health visitors trained for two years in a recognized institution and possessing a certificate or diploma granted by the training authority after examination.

(c) Nurses and health visitors who have less degrees of training than (a) and (b) with no certificate or diploma.

(d) Voluntary workers partially trained.

4. In estimating the value and usefulness of these various classes it may be laid down that the assistant must work continuously with the dentist and be subject to his instructions if the assistance is to be of real value, and therefore (d) of the above classification is ruled out. The experience of school dentists who have had to work with such assistance condemns it.

With regard to (c), while many women who have not gone through a full course of training either as nurses or as health visitors might be entirely suitable and may be at present rendering excellent service, it is felt that the perpetuation of a class of partially trained assistants having the title of "nurse" is out of harmony with the present tendency of nursing education and should not be encouraged. The training of (b) (the health visitor) is more particularly directed to other than the dental aspects of the Public Service and these would not be generally available.

5. It seems to be indicated then, that, if possible, the dental nurse should be drawn from class (a), the certificated nurse, who, either as a part of or in addition to her hospital training, would require a short course of instruction in the more specialized part of the previously-mentioned duties. In this connection, the following quotation from the annual report of the Chief Medical Officer of the Board of Education, 1919, is helpful:

"The question of the presence of a qualified nurse during dental treatment is one of importance. The value of a tactful nurse in the management of children is inestimable. Often the substitution of an unqualified assistant for a properly qualified nurse may be inevitable on occasion, but the arrangement cannot be regarded as satisfactory."

6. There remains to be considered the possibility of creating an entirely new class of dental assistant either in addition or to dispense entirely with the necessity for the certificated nurse.

7. The "dental dresser," who corresponds in this country to the American "dental hygienist," is designed more for certain operations described as "simple" and for cleaning and scaling the teeth, and the course of training usually given does not include instruction in any of the duties of the dental nurses already stated, with the exception of (d). Therefore if it should be decided that the use of such assistants as dental dressers or hygienists is justifiable, that in no way bears upon this question of the dental nurse.

8. There must then be provided in the future such dental nurses or assistants as can efficiently render the service as already specified. These must be either certificated nurses with a special additional training or a separate class specially trained as dental nurses. As already indicated, the former is to be preferred.

9. In either case the training should be of the nature of a course decided by a special responsible authority. The necessary facilities for study should be provided at recognized institutions and should terminate in an examination and a certificate for successful candidates. As in the case of health visitors, recognized training institutions might receive grants from public funds.

10. In dental clinics where a large amount of work was done, there might, from motives of economy, be a certain number of uncertified persons working under the direction of the nurse who would under her supervision perform the simpler parts of the service, such as (f) and (g), but these assistants would not be styled "nurses."

Editorial Notes

The New York State meeting will be held at the Hotel Commodore, New York, May 11th to 14th, 1921.

⁂

The eighth annual meeting of the Academy of Periodontia will be held in New York, Hotel Commodore, May 9th and 10th.

⁂

The dentists of Kitchener have undertaken to make a complete examination of the children's teeth of that city twice a year.

⁂

Dr. Ross Thomas addressed the Rotary Club of London, Ont., advocating an increase in the dental services in the schools.

⁂

Dr. C. H. R. Clarke, who died in Newmarket, September last, left an estate of $27,000, after fifteen or more years of practice.

⁂

The friends of Dr. W. Moore, of London, will be pleased to know that he has been honorably acquitted of a charge laid against him last fall. In disposing of the case, the judge said the charge should never have been laid.

The students of the Royal College of Dental Surgeons put on a stunt night in Convocation Hall which has the euphonious name of "Dentantics." It was an exceedingly creditable performance.

⁂

The "Ottawa Journal" is publishing a series of articles prepared by the Ottawa Dental Society on public dental clinics, the condition of teeth in Ottawa, and the effects of preventive measures.

⁂

Dortand's illustrated Dictionary, 10th edition, and McFarland's Bacteriology, 9th edition, have been received from W. B. Saunders Company for review. J. F. Hartz Company, Toronto, are the Canadian representatives of W. B. Saunders.

⁂

Deep regret was expressed by all sections of the community of Yarmouth, N.S., when the death was announced of Dr. E. H. Crosby, who passed away while attending a patient in his chair, having succumbed to a sudden attack of heart failure. Dr. Crosby was in his 53rd year and had practiced dentistry in Yarmouth for 22 years, during which time he had been a very good friend especially to those in poor circumstances. He left surviving his widow, a daughter, Gertrude, aged 20, and a son, George, aged 17 years, at home.

⁂

It is interesting to note that in Great Britain the oral hygienist or the dental dresser, as she is called, is not in favor in public service. In a report published elsewhere it is clear the British Dental Association has come to the same conclusion as the Ontario profession that a dentist's services can be increased by a well-trained nurse quite as much as with a hygienist.

⁂

The old question of a dentist employed by a non-dentist to carry on the practice of dentistry in Ontario has arisen again in Hamilton. Dr. Emerson Henderson fitted up an office on a conspicuous corner and by illness and other misfortunes he is said to have failed to meet his financial obligations. The creditors are now running the practice with Dr. Henderson as an employee. It is being run on the principles of trade and commerce since the creditors are for the most part plumbers, carpenters, builders, house furnishing and dental supply houses.

It was settled so far as the courts of Ontario can settle anything that only a dentist can own or conduct a dental practice.

Reviews

Index of the Periodical Dental Literature Published in the English Language for the Five Years 1911-1915. Includes Sixty-five Publications in England, Scotland, Canada, Australia, New Zealand and the United States.

LIST OF DENTAL BOOKS

Contains a list of all dental books published during the same period. These are grouped under 16 headings, and for each book there are references to more than a dozen bibliographical notices. The list numbers 214 books, which would make a very good modern dental library. There are, for example, 17 books on dental anatomy, histology and physiology, 12 on operative dentistry, 11 on prosthetic dentistry, 8 on orthodontia, 29 on oral hygiene and public education, 29 on dental pathology and bacteriology, 11 on materia medica and therapeutics, 30 on oral surgery, 30 on anesthesia, 7 on jurisprudence and ethics, and 6 on dental economics. Those include both first editions and later editions of books previously published.

CLASSIFIED SUBJECT INDEX

Possibly the most important thing that can be said about the subject index is that it establishes a definite basis for the cataloguing of dental literature. A practical plan had to be devised in order that a usable index could be prepared. The development of this plan required careful and extended study from many points of view. Attention is called to the fact (pages IX, X,) that this plan had previously been applied in indexing one line of journals from 1839 to date (the American Journal of Dental Service, the News Letter and the Cosmos), also that a considerable number of other journals had been indexed by several different cataloguers. The editorial department of one journal (The Cosmos) has used the index for nearly twenty years, and it has been used extensively at Northwestern University Dental School and by several individuals. The tryout seems to have been sufficient to justify the use of the plan for this larger effort, which effectively crystallizes this as the standard plan for dentistry.

Therefore a new professional foundation stone has been laid.

The classified subject index fills 260 pages and includes about 20,000 titles, which gives some idea of the thoroughness with which the work of classifying has been performed.

THE PLAN OF THE INDEX VERY SIMPLE

The plan is that known as the Dewey Decimal Classification, by which the titles of all of the articles on each subject are listed together in the Index without regard to the wording of the titles. The main divisions for dentistry are:

1. Dental Anatomy, Histology and Physiology. 2. Operative Dentistry. 3. Prosthetic Dentistry. 4. Orthodontia. 5. Oral Hygiene. 6. Dental Pathology and Bacteriology. 7. Oral Surgery. 8. Dental Jurisprudence, Ethics and Economics.

In addition, there are included under the general heading of dentistry, such subdivisions as dental education, popular education, periodicals, societies, libraries, museums. There are also included a number of groups in the field of general medicine and other related subjects, such as materia medica and therapeutics, physiology, general pathology, surgery, personal hygiene, public health, etc.

Most of the main headings are subdivided many times. For example, there are 23 subdivisions of operative dentistry, the most important including instruments and appliances, filling teeth with gold, amalgam, inlays of gold and porcelain, pulp treatment, prophylaxis, etc. Each main division has as many subdivisions as are necessary for a satisfactory classification of the articles.

AN EXCELLENT ARRANGEMENT FOR OUR SPECIALISTS

This scheme of grouping the articles under a number of main divisions makes the Index exceptionally desirable and convenient for the specialists, the number of whom is rapidly increasing. The orthodontist, the oral surgeon, or the prosthetist, will each find for his use a separate index which includes all of the articles within his field and none outside of it. Likewise the teachers in our colleges will find special groupings of the articles for their special fields. The dentist who wishes to write a paper for his society, may, after choosing his subject, turn to a list of articles on that subject without the necessity of searching through a mass of other material. To the editors of our dental journals, this arrangement is especially valuable.

The Index goes even further in the matter of convenience. For each heading, the list of articles is arranged according to the journals in which they appeared, the names of the journals being arranged alphabetically. Thus one may confine his search to those journals to which he has access, if he so desires. The Index goes even one step further; for each dental journal, the articles appearing in each volume are grouped, and the list is printed in the order in which the articles were published.

For example, if one should care to write a paper on gold inlays, he would find under that heading a list of the dental journals arranged alphabetically, then for each of the five volumes (1911 to 1915) of each journal, will be found a separate heading, followed by a list of the articles on gold inlays published in that volume, and the list arranged in the order in which the articles appeared.

TO FIND LISTS OF ARTICLES

All of the above might at first thought seem somewhat complicated. As a matter of fact, nothing could be more simple. There is a list of about 750 subjects on pink sheets in the middle of the book. One needs only to turn to this list, which is arranged alphabetically, find the subject which he desires to look up, and he will there find the page in the Index upon which the list of articles appears. It is not necessary, therefore, that one know anything at all about the plan on which articles are classified. The scheme appears to be "fool proof." One can turn immediately to the list of articles on any desired subject.

THE AUTHOR INDEX

The latter half of the book, 206 pages, contains about 30,000 references arranged alphabetically by authors. These references include books, papers, clinics, discussions, bibliographical sketches and other items of value for future reference. Almost every dentist who has participated in the activities of the societies to which he belongs, will be surprised at the completeness of the record. In each case, it is probably more complete than the individual could have kept it for himself, because he would likely miss many references copied from one journal by another.

In addition, the value of this Author Index to the individual in recording his own writings, there is, of course, the opportunity to look up and review the work of any member of the profession, as may be desired.

OTHER VOLUMES OF THE INDEX

Another five year volume of the Index is in preparation; for the years 1916-1920. This should be ready within a year. We will then have the past decade completely indexed. It is proposed to continue thereafter with the publication of annual volumes with paper covers, and combine these for each five year period into a single cloth-bound volume. After the annual publications are established, it is hoped that means may be found to publish several volumes covering the period from 1839 to 1910. It is estimated that one volume might include everything from 1839 to 1875, another 1875 to 1890, another 1890 to 1900, and two more the decade from 1901 to 1910.

NOT A COMMERCIAL PROPOSITION

The fact should be impressed that the publication of this Index has been a matter of sacrifice, not a scheme for profit. Our dental colleges, a group of individuals, and a few dental journals and societies contributed about $4,300.00 without expecting anything in return. Another group, among them many of the men who have contributed before, guaranteed to pro rate any deficit which might be incurred. It is not, therefore, a question of making money, but one of the size of the deficit.

The National Dental Association has voted $2,000.00 to apply on the 1916-1920 volume, and it is hoped that there will be enough regular subscribers to pay the balance of the cost. The annual volumes should be self supporting.

The edition is limited and is being sold upon subscription only. The price is $6.00 for all points of delivery within the United States and $6.50 (New York exchange) postpaid to all foreign points. Remittances should be made at once to Dr. Abram Hoffman, Secretary-Treasurer, 381 Linwood Ave.. Buffalo, N.Y.

* * *

The American Year-Book of Anesthesia and Analgesia, 1917-1918. (Copyrighted January, 1921,) F. H. McMechan, M.D., Editor.. Large quarto, bound in art buckram and printed on natural tint paper. 471 text pages, 175 illustrations. Containing a cumulative index of the pertinent literature for 1917-1918 and contributions by 84 eminent authorities. Surgery Publishing Co., publishers, 15 East 26th St., New York City. Price, $10.

The American Year-Book of Anesthesia and Analgesia, (copyrighted January, 1921,) covering the advances in these subjects during 1917-1918, is just at hand in its de luxe format, making as much of a typographical as a scientific appeal. Delayed in publication by the world war, it contains those methods of anesthesia and analgesia introduced to expedite military surgery, which are to find a place for themselves in civilian practice for the benefit of all concerned.

Again the editor of the Year-Book has tried to make it appeal to all the progressive members of the allied professions and specialties, who, in any way, are vitally interested in current advances in the science and art of anesthesia and analgesia.

The Year-Book, as a cumulative encyclopedia, provides the anesthetist, specialist, surgeon, dentist, research worker and hospital superintendent with those special advances that meet their individual requirements.

Fundamental studies in the pharmaco-physio-pathology of anesthesia and analgesia, of exceptional merit, have been included, and as many of them have a direct bearing on the clinical handling of patients submitting to operations under narcosis, they are doubly significant and valuable.

All pertinent phases of the science and practice of anesthesia and analgesia, during 1917-1918, have been covered in collated papers and researches from the most prominent international authorities, and the Year-Book is again a comprehensive and exhaustive postgraduate course. To those interested it is not a luxury but an everyday necessity as a reference volume.

Aside from series of contributions on complicating and safety factors of anesthesia, acidosis, blood changes, blood pressure variations, pharmaco-physio-pathological studies, both in general and local anesthesia, methods of technic, especially those developed in war surgery, and the newer methods of local analgesia in surgery dentistry and the specialties, the Year-Book contains a cumulative index of the pertinent literature for 1917-1918, which is invaluable to anyone making a study of any phases of these subjects and needing the necessary bibliography for reference or teaching.

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"Dental Prosthetics," by George Henry Wilson, Western Reserve University, Cleveland, Ohio.

Dr. Wilson's fourth edition on "Dental Prosthetics" is a treasure well worth having, reading and studying.

The author has covered the whole subject in a very concise and instructive manner, so that one can see all the details without too much manuscript. The student should find the book very valuable for its brevity and simplicity. Dr. Wilson has omitted nothing, and I was especially pleased to see his references to orthodontists and exodontists, in connection with artificial denture restoration.

Dr. Wilson gives the "new school" in prosthetics plenty of space to show its true worth, and credit must be given Dr. Hall for the efficient manner in which his ideas in relation to articulation and antagonizers are exemplified. The work of Dr. Gysi is so well presented that the student in prosthetics can easily grasp the scientific physics of anatomical articulation.

The author is to be congratulated on the thoroughness of the book.

A review of this book would be incomplete without a word of praise for the publishers. The volume is well bound, the paper excellent, and the type and illustrations are very clear. —Reviewed by J. A. Bothwell, D.D.S.

* * *

A Text-Book Upon the Pathogenic Bacteria and Protozoa. For students of medicine and physicians. By Joseph McFarland, M.D., Professor of Pathology and Bacteriology in the University of Pennsylvania. Ninth edition, thoroughly revised. Octavo of 858 pages with 330 illustrations, a number of them in colors. Philadelphia and London: W. B. Saunders Company, 1919. Cloth, $4.75 net.

During the past few months new editions of several dental books have been issued. Among these there has not been any improvement in the diagrams of cavity preparation. Either the authors or the engravers have bungled shamefully. Photo engravings show a poor idea of enamel structure and a worse notion of stress. There are enamel bevels on the occlusal surfaces of molars and bicuspids where heavy stress falls which would be excessive if on a proximal surface. In the text the author states that there should be no sharp angles in the outline and in the diagrams appear many cavity forms in which acute angles are present. At the junction of the labial and gingival walls the angle is almost always shown as acute where it should be rounded.

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Original Communications

DISEASED CONDITIONS AROUND THE TEETH AND THEIR REMOVAL

W. J. Laker, D.D.S., Toronto.

Read before the Elgin Dental Society.

Mr. President and Fellow Dentists:

It is almost needless for me to give the time-worn speech as to the pleasure I have in being with you to-day, still I feel my endeavor to give this short paper would surely be getting away to a bad start if I did not mention the fact. So, gentlemen, I will say that it certainly has been a pleasant day for me. You have all been so free and friendly, and I trust this may not be our last meeting together.

At the clinic this afternoon it was my endeavor to show you by actual operations that it is possible to remove the diseases that are to be found at apical end of the teeth, also to prove that the removal of these conditions is only the proper thing to do and not merely to remove the teeth and leave *in situ* the most serious part. I am sorry to say that this matter has not received the serious attention it deserves.

In this age of progress, does it not seem to be very close to the careless zone for a graduate of one of the finest dental colleges in the world, to remove a tooth and leave remaining the serious condition in the mouth to still go on causing whatsoever ailment it has been causing, when most probably it was to try and clear up some secondary disease that it was removed? Especially is this matter serious if the operator has a radiograph to show the condition to be operated on. Sometimes one is inclined to feel that men look upon the removal of infected teeth as a trifling matter, whereas it is a very serious one, especially if it means health or disease for a patient afterward, to say nothing of the area being in an unhealthy condition at the time of operation, and probably remain so even after tooth is removed. Then we must remember that conditions are usually worse than they appear, as was the case of the upper right central; in this case the radiograph did not tell the whole truth, because you will remember we found about one-third of the labial plate decayed away. This case proved beyond a doubt that a radio must not be relied upon entirely. Especially is this true of pyorrhea cases, as the radio shows only the lingual side, whereas it is usual to find more bone destruction labially.

I think it was demonstrated that it is possible to remove these diseased conditions. It is also a very simple matter to medicate the cavity from which the condition has been removed.

If these areas do not receive proper attention, how little benefit is a patient going to receive compared with the results to be expected from a thorough and surgical operation? This is no doubt why some say this or that was removed and patient was no better; as a matter of fact, in so far as infection was concerned, this or that was not removed, but in reality was made worse by being ruptured and left.

Gentlemen, this is a serious thought, when we realize that to-day so many people are having their teeth removed in an endeavor to rid themselves of an ailment which may be, to say the least, relieved by the removal of the condition we are speaking of.

Then, when we have access to some of the conditions, why not at least try and remove them? If you cannot, in justice to your patient, see that they are removed. Some of these infectious areas are too large to remove through the opening left after the mere removal of the tooth. This condition was met with to-day, and it would be out of all reason to expect to remove such a large condition through the small opening which the root would leave.

Patients are sorry enough to part with their teeth, but to lose them and keep the infection seems to be wrong treatment given by a doctor of dental surgery. (Note the two last words, gentlemen).

Some patients may say: "Why is it, doctor, if I have so much infection in my mouth, that I am not ill? Why have I not some bodily ailment?"

Many reasons may be explained. Suffice it to say, that it is a known fact that the bodily resistance is not always up to the same high level mark, and when the lower vitality mark is reached is when a patient might be seriously affected by these conditions.

There are, as you all know, changes in one's life, routine, environment, which alone causes changes, to say nothing of extremes forced on us by accident, such as shock, exposure, etc.

Again, the secondary ailment may be taking place though at present not of serious enough type or probably not having progressed far enough to be specially brought to patient's attention. The disease, in other words, is only commencing. The resistance, or body immunity to disease, is a peculiar scale or trial balance in us, and a drop in the bucket to turn the balance may come any time, and often catches one when unprepared. Therefore, it seems only wise to pay strict attention to the diseased conditions which are in our sphere of work, and if necessary explain why.

It may not always be the mouth infection which has caused the secondary ailment, but it seems only fair to suppose and believe that the general bodily condition may have been so relieved of a prolonged battle against this oral infection that the forces of nature can now devote all their energy to battle other conditions, whereas before the forces were so much divided that no battle was won.

We all know that it is merely a term used by patients and others "to have teeth extracted." Should we not feel and know that this means not only the removal of the tooth, but also the removal of whatever infection is in any way connected with it?

Does not our patient trust us to do what is proper and necessary for their relief and benefit? I think they do. Yet how seldom is the infection removed, how seldom is an endeavor made to remove it? I venture to say that in many cases no attempt is made. Present company excepted, gentlemen. I might state here to avoid any debate, that if re-treatment or root amputation seem advisable, always bear these in mind, and if wise, suggest same to patient.

I once made the statement that many of these infected areas seemed larger when reached with the curett than was suggested from the radiograph. My statement was made light of. This is still my conviction and belief. Whether the bone structure is softened before it is actually lost or not, I am not positively able to say, and by its softness allow greater depth for curettment. Nevertheless, I was pleased to hear an eminent research worker make the same statement. His verdict was unquestioned. I will pass around a bottle containing samples of infected material removed after the teeth have been extracted. They are somewhat diminished in size now, as they are in alcohol. Still they are proof as to what might be left in the patient's mouth when they certainly should be removed.

In the manner in which we endeavored to operate to-day there is very slight reason why all the infection should not be removed. We could see and feel, plenty of access, and usually a rapid healing wound.

After this removal, if the patient does not receive benefit or relief of bodily ailment, then it has probably progressed so far that the removal of the cause, if the tooth infection was the cause, had not been undertaken early enough. Then bodily ailment must receive even more attention and be looked into more thoroughly. I repeat, how uncertain would be the result if we simply removed the tooth or teeth and leave the serious trouble behind, and an open wound as well.

If we have a radiograph of the area to be operated on, and there appears to be much loss of bony structure, there seems to be only one sure way to clear it up, and that is to have good access and curett it and cleanse it thoroughly. Does it not seem reasonable that if this is done by the operator, it can be done far quicker than nature could do it even if she did do it, and how much more rapid would be the good result? There is a point I would like to mention here, and emphasize it as well. It is this: If you have a patient come to you who is in poor health and with an unhealthy mouth condition, no matter of what description, do not attempt to operate on too great a diseased area at the first sitting in particular; do a little, and do it thoroughly and well. Notice the result on your patient. You may be able to operate on a larger area at the next sitting if there has been no great reaction. A slight reaction is a good sign; we feel encouraged at this, feeling we have touched an area which has in all probability been the cause of some systemic disturbance.

Do a little bit, but be thorough in it. It is always wise to learn the resistance of the patient, their mode of living, environment, hours of work, strain on system from various causes, how long ill, etc.

Go slowly and get good results. If the patient has been ill for any length of time, or illness of recent date only, and oral infection is suspected as the cause, you may find a few teeth only with an infected area around them. Find out the history of these teeth, if possible. Some may not show much infected area judging from radiograph alone. Learn how long these have been devitalized, or how often treated, etc., and as others in the same mouth have not stood the test of time, you most likely will find that those showing what appears to be only slight infection according to radiograph, may be and often are the most serious to the system.

This is my firm conviction, and we very often remove them and get splendid results. This, I may say, is the contention of some of the most prominent men in the work of the removal of oral infection relative to curing systemic disease. I asked this question at one of the largest institutions in the world, where cultures are made of every case, and without any hesitancy received an affirmative answer. Thoroughness in these cases is of vital importance.

We may often wonder why a mouth repulsive to look at due to a filthy form of pyorrhea does not cause more systemic disorder or secondary infection than is usually found, and vice versa a comparatively clean mouth with that sneaky form of pyorrhea, and this patient ill with anaemia, heart leison or other trouble.

My solution is, that in first case of filthy mouth, the infection for the most part is carried away by ordinary process of alimentary or kidney elimination. This may account, however, for many cases of stomach, bowel, kidney and bladder disorders.

In the second instance the infection being of a slimy nature does not flow or pass into oral cavity as readily but is absorbed into blood stream.

The first case is due probably to micro organisms which form pus, combined with yeasty condition due to bacteria of fungi class. The pus producer is usually of the Staphlococcus group.

The second class is practically due to Streptococcus and this group does not usually form pus as we see or deal with it.

Notice when removing the next few teeth affected with pyorrhea, the difference in the appearance of the cases. One filthy, the other slick and slimy as if the root had been dipped in glycerine or honey. This slimy type we consider very serious and the sockets from which teeth have been removed receive special attention. Those usually play a serious part in many dangerous systemic conditions, the heart and blood being often affected by them. With the filthy type you often notice the bone distruction which has taken place. Septum gone sometimes, abscess or portion of root eaten away. In those cases curettment is almost a compulsory treatment after removal.

Do not remove too many at a sitting, be guided by patient's vitality.

The clean case can be cultured if in any doubt and usually a practically clean Streptococcus growth will be found. Use agar or blood agar, or even smear under microscope will do.

We sometimes read articles in which mention is made of culture work, or the growing of the micro-organisms using agar, blood agar petur dishes, slants, etc. I have with me enough of these to show you what they are and the difference in them. A little explanation will show their different uses.

We read articles of recent date, say dating a few years back, discussing and in some cases advising the careful examination of patients. It is not my intention to discuss these articles only to say that I fear some might have us tread on the grounds of our co-worker the physician.

We are requested to go hand in hand with the physician, assisting and co-operating with him, how can this be done if we are to undertake the work which is of custom and usual procedure his work and to do it? I feel that he is better qualified than the average dentist. Personally I tried this after studying the work but discontinued it in my own work. We get these details from the physician.

A reason which appeals to some of us no doubt in regard to the seriousness of oral infection, is the part that with every closure of mouth there is more or less pressure exerted upon the apex of the tooth, this causing a marked tendency to greater distribution of pus and absorption. Then again this form of disease, if we may call it such, is in a confined area, no exit unless it causes one to be made by breaking down of tissue and as one result a fistular or leakage into the general system perhaps.

Again these organisms do not seem to be of a self-destroying class nor do they appear to run a definite course and pass a crisis and then recuperation as is the case with some forms of micro organisms.

The form of infection we deal with apparently goes on twenty-four hours daily and thus the seriousness of chronic abscesses or infection in our sphere of work.

Before I forget I do not wish it understood that I am in favor of removing all devitalized teeth, conditions and past history must govern to a great extent.

The most of us to-day believe that oral infection is connected in some way with systemic disease. Still it does not of necessity follow that every devitalized tooth shall or does cause secondary ailment.

Still how many patients will say they are better than they ever remember, now they have a clean mouth. I mean, gentlemen, not only having had the teeth removed but the infection in the area no matter of what type, honestly removed.

The result to patients may be favorable and pleasing. First it may have been primary cause. Second may have relieved the system of a chronic prolonged battle so that upon removal the forces may be exerted to fight any other ailment with undivided strength.

How often an abnormal white blood count (high) will drop to normal upon the removal of oral infection, proving that the enemy which has been causing an increased white blood count has been done away with.

With regard to one case in particular in two days operation. The upper left central radiograph did not show any destruction of bony structure, yet upon exposing the bony plate you all saw that about one-third of the plate had been absorbed or in plain words, decayed away. Now our picture did not show this; it did show, however, a perfect palatine view, thus far a deception.

In speaking of the removal of infection, I have taken it for granted that absolute surgical cleanliness is carried out, and that the tooth is not merely removed but the infection also no matter what kind you call it.

HEMORRHAGES AND THEIR TREATMENT

F. H. Barry, D.D.S., Ottawa, Ontario.

Read before the Ottawa Dental Society.

Mr. Chairman and Gentlemen:

Much has been written and much more has been said about "The girl and her downfall."

But very little has been written and less has been said about "The boy and his downfall."

So it is with the subject which I wish to discuss this evening, "Hemorrhages and their treatment."

And yet hemorrhages is a subject which causes a dentist no little amount of worry during the life of his practice.

Have you ever had the telephone ring between the hours of 12 p.m. and 6 a.m. with an excited party on the other end to tell you that a husband or wife has had his or her teeth extracted and that they have been bleeding for the last hour or hour and a half and that they have done everything within their power to arrest the same but to no avail? Then comes the sad plea for you to separate yourself from your bed and betake yourself to your office. Where, after rendering your patient a service you receive but very little thanks. In fact more or less probably in a sub-conscious way you are held in the opinion of the patient as being the direct cause of the anxiety.

On the other hand the proverbial Mrs. Jones is about to have her teeth extracted. She has discussed the subject at length with her husband. The children have overheard the conversation and have conveyed the news to the other school children that mother is about to have her teeth pulled.

On the appointed day Mrs. Jones arrives at your office and finally she nerves up courage enough to get into the chair. She then begins by telling you how greatly upset she has been over the mere thoughts of having her teeth extracted. "Father, you know, was 87 years of age when he died and he had all his front teeth still remaining, while mother has worn a plate for years, but last year she cut through another tooth, and Dr. O'Brien, our family doctor, was saying that he thought that possibly she was getting a third set of teeth." And still more astounding than ever is the fact that Mrs. Jones' neighbor had her teeth extracted four years ago and she bled for four days and she was just wondering if the same thing was going to happen to her.

This all takes time and in dentistry, the same as in any line of business, "Time is money." Mrs. Jones has finally had her teeth extracted and they are bleeding profusely and more time has to be spent in the treatment of same.

How are we to treat such cases and arrive at the desired result in the shortest possible time? Because, after all, results are really what count.

First of all let us consider the different kinds of hemorrhages, their causes, treatment and prevention, if possible.

The kind of hemorrhages which I wish to discuss are those where we have a loss of blood from a tooth socket or the surrounding tissue caused by the extraction of a tooth. These are of three kinds, arterial, venous and capillary, and as to their time and duration they are known as primary, intermediary and secondary.

A primary hemorrhage is one immediately following an extraction and may be either arterial, venous or capillary, and as a rule is a complication of the three types. It is well to allow such a hemorrhage to take its natural course, especially if the tooth extracted has had an abscess area around it or if a local anaesthetic has been used. By allowing a free flow of blood for a few minutes it helps materially to drain the pus from the abscessed area and also allows the escape of the agent used to produce the anesthesia. However, if the bleeding lasts more than ten minutes it may be stopped by using not warm but hot water, because warm water increases the flow of blood while hot water is a hemostatic. If this does not arrest the bleeding a little phenol may be added to the water before applying it to the affected part. It may be necessary to use an ethyl-chloride spray. This should be used with great care owing to the fact that ethyl-chloride acts as a general anaesthetic and has long since been regarded as one of the most dangerous anaesthetics used. Other chemical agents known as styptics may be used. Tannic acid, alum, gallic acid, adrenalin chloride and turpentine may be considered the best. Care must be taken so as not to use a drug or agent that would cause a breaking down of the tissue and would be a forerunner of a secondary hemorrhage. Of these drugs phenol, arsenic trioxide, trichlorocetic acid, silver nitrate, zinc chloride and chloride of mercury are to be the most feared. If all these methods fail packing the sockets may be resorted to, which I will treat with later.

Let us pass on to the Intermediary hemorrhage. This is where we have a recurrence of bleeding any time within twenty-four hours of the operation. Intermediary hemorrhages generally are the results of the use of stimulants, excitement of a severe nature or extreme exertion on the part of the patient which increases the heart's action and in turn causes a sudden rise in the blood pressure. The most favorable time for such hemorrhages is shortly after retiring owing to the fact that when the patient is in a recumbent position the blood pressure in the jugular veins is highly increased.

Probably the most disagreeable factor entering into the treatment of such hemorrhages is that it is a night job.

First of all, if it is possible to get in touch with the patient over the telephone, impress the fact that it is now night and that your car is out of commission, and in a tactful way give the patient to understand that going to the office at this time of night is about the farthest thing away from your mind.

This may seem a rather peculiar way in which to treat an intermediary hemorrhage, but nevertheless it gives the patient to understand that after all it is not such a serious matter, and then again when one is forced more or less to rely upon their own restorative methods the results are arrived at much more quickly.

Ask the patient what methods he or she has been using and in the majority of cases they will say that they have been using warm water and that there is a nasty thick piece of something in their mouth of which they cannot rid themselves. Explain to them that this is a blood clot and that nature is trying her best to heal while they are doing the very opposite. Tell them not to use warm water but real hot water. Tell them how to make and apply a compress and for them to hold it quite a long time before examining for results. Also tell the patient to prop themselves up when they go to bed.

If this is done and the directions carried out results will be had in the majority of cases.

However, in case that all these methods fail to bear fruit, have the patient call at your office, if possible, where you have the proper facilities for working with and then try the compress, tannic acid and adrenalin chloride. Where a history of bleeding can be obtained administer calcium chloride in from V to XX grains, which will increase the coagulability of the blood. Extract of oil of eucalyptus on a pledget of cotton inserted in the socket often relieves the bleeding condition.

And now let us pass on to the much talked of Secondary hemorrhage. A secondary hemorrhage is one which occurs after a lapse of twenty-four hours, and in some cases days may intervene before we have this condition arising. It is generally caused by some minor injury of the affected part or it may be caused by sepsis or infection.

First of all the socket should be cleansed and any particles of broken down tissue or foreign matter should be removed with Derenberg tweezers. In the cleansing operation warm water may be used because we already have a free flowing of the blood. During this operation a strong antiseptic solution should be used and then the surrounding tissue should be painted with iodine.

If a compress when properly arranged will not arrest the bleeding, make a cone-shaped plug of absorbent cotton and insert it into the socket. Having the open end level with the gum tissue cover it with sandarac. This will prevent any moisture from either entering or leaving the socket. Such a packing should be removed with care in about twelve hours and should never be allowed to remain more than twenty-four hours.

There are rare cases where we find the socket fairly well filled with granulated tissue and still a little red pin point exposed. This might either be a vein or an artery and on the slightest provocation is due to rupture.

In case of bleeding from this terminus a double suture may be made in the adjoining tissue completely covering and strangulating the exposed vein or artery. If the patient is inclined to be a weakling, four or five drops of a 2 per cent. solution of adrenalin chloride may be applied externally with good results inasmuch a fainting spell is produced whereby the heart's action is lowered and by the time of recovery a blood clot is generally formed and the hemorrhage arrested.

After treating a hemorrhage and arriving at the desired result the patient should be instructed as to what to do and what not to do.

1. He should abstain from the use of stimulants, including tobacco.
2. He should not take hot food or hot drinks.
3. He should maintain an upright position.
4. The jaws should be kept at rest.
5. He should abstain from all kinds of excitement or exercise which would increase the heart's action and cause a rise in blood pressure.

When a history of excessive bleeding following a surgical operation can be obtained, judgment must be used as to whether the cause was local or general. If it was general, as in the case of people commonly called "bleeders," the operation should be postponed for a few days in order that calcium lactate in from V to XV grs. could be administered three or four times daily for three or four days.

If more than one tooth is to be extracted it is advisable to extract but one tooth and await results, and then extract the remaining teeth at subsequent sittings.

Remember, gentlemen, that it is no disgrace to summon medical aid and at the same time protect yourself against any serious result.

TOOTH ROOT RESECTION

S. W. Sproule, D.D.S., Ottawa.

Read before the Ottawa Dental Society.

The paper I wish to present is "Tooth Root Resection." Although my experience has been short, yet I claim to have had a measure of success in most cases under my care.

Root resection is that part of the dental science which deals with the cutting off of part of the root of a tooth or a calcified portion which may be attached to the root.

Such operation is *only indicated* in *complicated* abscesses, which will not yield to treatments now used in practice. As a last resort root resection often gives gratifying results. The resection of roots must be confined to the anterior teeth, centrals, laterals, cuspids, and rarely in buccal roots of first bycuspids, and molars of the upper jaw. I have resected a lower central and lateral, but it proved to be a difficult procedure, and my results were discouraging. In the uppers the bone covering the roots is not of great extent, and when a good operation is performed we usually get good results.

Examination and Diagnosis.

After treatment of an abscess tooth a few times, we usually know state of the apical tissues. An X-ray picture will give further aid. The destruction of bone and tissue about the apex will be definitely shown. From such picture the location of your incision may be judiciously chosen.

Cases Where Resection is Indicated.

(1) Chronic abscesses of long standing:

(a) Peridental fibres will be destroyed.

(b) The root end pus soaked.

These factors rendering it beyond treatment by other means except extraction.

(2) Acute abscesses when not treated in a short time destroy the peridental fibres but usually turn chronic.

(3) Apical tissues destroyed by strong drugs will not heal, resulting in chronic abscesses and permanent detachments of the tissues. These conditions would probably heal by the absorption of the denuded parts, but neither cementum or dentine can produce such, owing to their lack of circulations of red blood cells.

Most authorities agree that the roots should be filled before the operation by the best method in practice. There are so many root fillings to-day, that there is much variance of opinion. However, if these three factors are fulfilled, the results should be uniform. Factors: (1) Re-establishment and maintenance of asepsis; (2) thorough filling of the canal; (3 preservation of the color of the tooth. I will present a method of filling roots for such operations. In most cases where resection is necessary, you will have an enlarged apex, due to the abscessed condition at the root end. After proper treatment of the canal, it should be filled with a white gutta percha cone, preferably one cone fitting the canal. If using two or more small cones, often one is forced through the apex and complicates the case. The canal can be measured by wrapping a few strands of cotton on the end of a broach. By your X-ray you can measure how far the broach should be inserted, also by touch in the apical area of the canal. Then wrap on more cotton until the broach approximately fills the canal. (1) Select a white cone about the same size. (2) Moisten the canal with eucalyptol and flood with white chlora-percha worked up and down gently. (3) Insert the cone and pump gently and finally press to place. In such cases the patient does not flinch as the cone nears the apex, as the tissues there are dead. In smaller canals gutta-percha can be pumped into them and forced well to the apex with pressure on gutta-percha in the chamber. However, these roots should always be enlarged, and if any doubt remains as to the root filling, it should be re-treated after resection.

TECHNIQUE OF OPERATIONS.

The operations must be done under the most aseptic conditions. The hands of the operator and the instruments must be thoroughly sterilized. Make a deep injection with local anaesthetic in surrounding tissues. Conductive anaesthesia may be used if desired. With a sharp lancet make a circular incision immediately over and parallel with the affected root. Adrenalin chloride 1/1000 solution applied to the incision will help to control the blood.

Deflect the mucous and periosteum with a suitable instrument (periosteotome) and hold back with a retractor. Usually very little bone covers the roots and may be broken through with an instrument as the tissues beneath are necrosed. If necessary the bone may be chiselled away to expose the roots. With a bi-bevelled drill, cut away sufficient bone about the apex to give free access. Bur through the centre of the root at the desired place (this will be governed by the destruction of the tissues) with a sharp drill. A fissure bur now inserted in the hole and worked from side to side will easily remove the denuded portion. Remove the end with an excavator and thoroughly currett the cavity, removing all the necrosed bone. Smooth the end of the root with a round bur, being careful not to leave any sharp eminences on the remote side of the root. Fill the apex with amalgam if desirable. If the root filling is good this is not necessary. Wash out the cavity with Carl Dakins' solution and pack with sterile gauze. An antiseptic paste may be used on the gauze. Cover the surface with collodium.

After Treatment.

Instruct the patient to keep the mouth clean as possible and to return each day or two for change of dressings until granulation begins. In most cases it is only a matter of a few days until the root end is covered with healthy granulation tissues and re-infection not likely to occur. In cases where necroses was great or roots saturated with pus, the cavity will be larger and will take some time to fill in. A gutta-percha plug may be fashioned to fit the opening and dipped in oil of cloves before insertion, but should only be used after granulation has made some progress. Part of the plug should be removed at each dressing to allow for healing.

There is much doubt as to what method of healing takes place. Some believe the cementoblasts of the root build new cementum over the end, others that the tissues heal over without any attachment, and a few believe we get a re-attachment of the tissues.

However, all cases should be X-rayed some time afterwards, preferably about a year, to note the conditions present. A large percentage of resections, when judiciously performed will, I believe, remain healthy and give service for years.

"WHEN IS A DENTIST JUSTIFIED IN ASKING A FEE FOR A HOUSE CALL?"

In regard to the questions asked by Dr. Hord, in the March number of the Dominion Dental Journal, under the above caption, a general answer fitting all the questions may be condensed into: It all depends upon circumstances. In regard to hemorrhage cases following extraction, in a nearly sixty years' practice, I have been called upon to make a house visit twice only, in cases where I had done the extraction, and in neither case did I make any charge. In cases which are so rare, the fee does not count. A quick response, however, is always very much appreciated, and may in the long run return a reward making a generous fee seem very small. Having no liking for the operation, living in a large city well supplied with specialists in that line, I have done very little extracting.

In cases where I have not done the extracting, I have had no hesitancy in naming a fee. Here again, there is room for a wise judgment, inasmuch as these cases are quite infrequent, especially if one knows the operator, it may be better to pass it off as an emergency service to a professional brother, and make no charge.

During my long practice, the tendency in the profession to keep the fee question prominently to the fore has not made a favorable impression.

To his second question, I would say: Yes, and as often as he deems it necessary, bearing in mind, however, to avoid even the least suspicion of "nursing the job."

To the third question: Is he justified in calling after a medical adviser has the case in hand? Yes, if he can be of assistance, and feels satisfied that his assistance will be acceptable. Yes, also, if the visit is simply to show his interest in the case. It may be appreciated by the patient, it often is, but beware of arousing any feeling of jealousy in the mind of the M.D., who in such cases holds the centre of the stage.

Regarding the fourth question, I would say, decidedly no. In most bailiwicks it is illegal. The dentist may know what should be done, but lacks that knowledge which comes by, and is gained only by daily experience in treating such cases. A little learning may prove a dangerous thing.

To the final question. Again, a decided yes, qualified, however, by adding, in all things concerning his calling.

In all cases of doubt regarding these matters, safety first never comes amiss. Emergencies may warrant taking risks, but go slow when the footing is uncertain.

WILLIAM H. TRUEMAN, D.D.S.,
Philadelphia, Pa.

SOME IMPORTANT HINTS IN THE LOCAL TREATMENT OF DENTAL PERICLASIA

J. S. GERVIN, D.D.S., Ottawa.

Read before the Ottawa Dental Society.

The American Academy of Periodontology has formulated and standardized a scientific nomenclature to describe pathological conditions arising in the gums and soft tissues of the human mouth, and is attempting to introduce it to the profession to replace the erroneous or undemonstrative terms in use at present, such as Pyorrhea, Pyorrhea Alveolaris, Interstitial Gingivitis, Phagedenic Pericementitis, Alveolitis, Periostitis, all of which are descriptive only of some phase exhibited in different cases. The lexicographers selected the Greek word ''Klan'' meaning to break, as their base to describe the fact that there is always a certain amount of destruction of the tissues surrounding the teeth, and by adding two other Greek words ''Odous,'' a tooth, and ''Peri,'' meaning around, make a combination, Periodontoclasia or Dental Periclasia, meaning the breaking down of the tissues surrounding the teeth. And by the use of the qualifying terms suppurative and non-suppurative we have a definite technical expression to describe any pathological condition contiguous to the teeth. Therefore you will note the absence of the universal word ''Pyorrhea'' in this paper.

''A clean tooth never decays'' is the watchword of the oral hygienist to-day. This may be an unscientific statement, because modern dental research workers are becoming convinced that constitutional disorders enter into the etiology of ''caries,'' nevertheless it implies a great truth in the prevention of decay of the teeth. It might be said with the same degree of truth that ''a clean mouth never develops periclasia,'' and this is the broad principle upon which the local treatment of Dental Periclasia is based, which is an operation to remove all foreign material or irritating conditions from all the exposed surfaces of the teeth and to smooth and polish these surfaces to such a degree that the patient will be able to keep them in a perfectly hygienic condition by home treatment.

The time limit for this paper will not permit any extensive consideration of the subject, so let us choose only two features of the treatment; first, deep root curettement and secondly, home treatment. Success and failure are so hinged upon the skill and thoroughness with which this part of the operation is executed and with the degree of co-operation you can stimulate in the patient in massaging his gums with a tooth-brush, that they merit a more elaborate discussion.

However, we shall make a brief resume of the different steps of the treatment leading up to these two stages. Let us consider the case of a patient presenting a typical suppurative periclasia—some of the teeth loose, the gums swollen, purple or red in color, with a thick creamy colored pus oozing from pockets of medium depth around the teeth affected. In making an examination, radiograms should be taken and studied, the teeth tested for vitality, a careful observation made of the occlusion, and a thorough inquiry made into the condition of the patient's general health, and if there is any suspicion of any disorders he should be referred to a competent physician.

The sequence of the different steps of the treatment is, briefly: Sterilize the gums by painting them with some antiseptic such as glyceral iodide and remove all salivary calculus, exercising great care not to cut or irritate the gums, because when opening up a large area of granulating tissue, it is possible to introduce bacteria into the circulation and cause deleterious results. By careful instrumentation, which I shall describe later, smooth all the enamel surfaces and polish to a glossy finish. At this stage it is possible to decide whether any teeth are hopelessly diseased, and if so, they should be extracted. Then correct any existing traumatic occlusion. The next step is the deep root curettement of the pus-pockets, which involves two outstanding features that must be always observed, first, each tooth should be completed before passing on to another, even though it requires a whole sitting to do it, because there is a danger of re-infecting the pocket if it is necessary to enter it again, besides, you will disturb Nature's process of repair. Secondly, avoid injury to the fibrous border of the gingival margin which is intended to hug closely about the tooth.

Root curettement is a system of instrumentation to remove not only the deposits of surumal calculus but also the dead peridental membrance without making scratches or grooves on the root surface with the instrument, and without scraping away more than the outer layer of the cementum under which lies the denser cemental layer, which when left smooth will permit the overlying gum to nestle closely around the tooth. This requires a most careful and intelligent manipulation of the instrument in use.

There are many types of instruments on the market, all of them efficient if properly applied, but perhaps the safest type to use is the push and pull instrument such as the Hartzell set which introduces the principle of leverage as a force for smoothing the tooth surface, rather than the uncertain force developed in the fingers. Leverage means that the shank of the instrument must be fitted to the tooth surface so that the tooth may act as a guide in the movement of the blade. This movement is produced by a free forearm motion. The blade on the end of the instrument being square-edged (push or pull, finishing blade), will not take hold of a tooth surface unless it is rough. Consequently it is almost impossible to cause any marked degree of injury to the cementum as in the case of sharp edged scrapers and files.

With this technique of instrumentation commence the root curettement at the gingival opening of the pocket and slowly proceed toward the apex, carefully finishing each surface before passing deeper. The whole area of the tooth surface in the pocket should be carefully explored, quite to the line where the alveolar tissues are attached to the cementum, but care must be exercised not to go beyond or destroy the healthy attachment.

Before proceeding with the discussion of gum massage, two valuable suggestions might be mentioned here. First, postoperative soreness is considerably relieved by applying glyceraliodide or some astringent into the pocket. Secondly, a method to sterilize the instrument during the operation. Have a convenient medicine holder with three separate compartments placed on the operating table; the first to contain pure phenol, the next alcohol, and the other phenol-sodique. By dipping the working point of the instrument into the drugs in the order mentioned, some degree of sterilization is secured, as well as a certain anodyne effect produced in the gums by the phenol-sodique. But now that I have introduced drugs and antiseptics into this paper it is necessary to explain that they have little or no curative value in the treatment, which must always be considered a matter of removing the irritants (calcic deposits and resultant necrotic tissues) from the gingival area and root surfaces of the teeth.

Probably the most discouraging feature of the treatment of dental periclasia is the fact that so great a factor of the success of it lies with the patient and out of the operator's control except in so far as he is able to teach and create enthusiasm in the home treatment, which is gum massage and oral hygiene. It is surprising to note the ignorance of even the more intelligent class of patients in the proper use of the toothbrush. It is more surprising to note how few dentists take any time to instruct such patients, but in connection with this work it is very essential.

Prescribe a toothbrush similar to the "Rolling," smaller adult size and hard bristle, and instruct the patient to bring it with him at the appointment at which you wish to commence gum massage. Stand in front of him and with your toothbrush demonstrate the movement, and have him imitate your action with his own brush, just as an instructor in calisthenics has his class follow him. The "Rolling" brush, as the name implies, is used with a rolling motion from the gums onto the teeth. Commence at the buccal side in the upper molar region, place the side of the bristles well up on the gum, but not up as far as the unattached mucous membrane, and with a rotating wrist movement turn it over the gums onto the teeth. Proceed all around the buccal side. Then do the same on the lingual. The lower is done in the same manner except that you turn it upwards, in other words, never brush against the gingival margin. Explain to him that while it is very necessary to keep the teeth clean and polished, it is most important to brush and massage the gums for the purpose of stimulating the circulation of the blood through the tissues, and if he follows out this method of massage he cannot avoid cleaning his teeth.

The constitutional causes of periclasia are still rather obscure and may be of little interest to the dentist in general practice. However, a great deal of interesting research work has been carried on in that line lately, and perhaps we shall have some new theories presented in the near future. But the local treatment, in which we dentists are more deeply interested, will still remain an operation, requiring an intelligent idea of its etiology of the disease, time, patience and honest hard work to secure satisfactory results.

Dental Societies

TENTH BIENNIAL CONVENTION, OTTAWA, CAN. DAILY MINUTES OF THE PROCEEDINGS

FIRST SESSION.

The tenth biennial convention of the Canadian Dental Association was called to order at 2.30 p.m., Tuesday, August 17th, 1920, in the Normal School Building, Ottawa, the President, Dr. Frank Woodbury, Halifax, presiding.

On motion of Dr. Black, seconded by Dr. A. E. Webster, Toronto, the printed programme as placed in the hands of members upon registration was officially adopted.

The Secretary, Dr. Bradley, read a telegram from Dr. F. H. Garvin, Winnipeg, expressing regret at his inability to attend the convention and extending his best wishes for a successful meeting.

The members were welcomed to Ottawa in an address by Mr. Harold Fisher, Mayor of the city, which was responded to by Dr. W. A. Thornton, Montreal.

The Vice-President took the chair while Dr. Frank Woodbury delivered the President's address, which was duly adopted and referred to the proper committees, subject to adoption of proposed new by-laws.

On motion of Dr. Seccombe, seconded by Dr. Webster, the report of the Committee on Constitution and by-laws was unanimously adopted. The following members were thereupon elected to the executive: Dr. Wallace Seccombe, Dr. Jas. M. Magee, Dr. Gordon McLean, Dr. Nolin, Dr. George Bush, Dr. Hodgson, Dr. Allan Strang, Dr. A. E. Webster, Dr. Thornton, Dr. Beauchamp. It was announced that the following members had already been elected from their various societies: Dr. Conboy and Dr. Bothwell, Ontario; Dr. Clay, Alberta; Dr. Jones, British Columbia; Dr. Bagnall, Prince Edward Island; Dr. Larsenneur, Dr. Gauvreau, Quebec.

The Secretary presented the financial report, motion for the adoption of which was duly seconded and carried.

The Secretary presented report of the Executive Committee as follows: At the Chicago meeting Ottawa was selected as the place of meeting for 1920. The constitution was adopted and a committee was charged with the framing of by-laws. These appeared in the Dominion Dental Journal of which every member got a copy this morning. In January, 1920, an executive meeting was held in Toronto and the programme for this convention mapped out—of course, it has been considerably changed since. Yesterday afternoon an executive meeting was held here, the constitution and by-laws were gone over and the changes which I mentioned a short time ago were suggested. Of course, these suggested changes have been rejected so that our meeting did not amount to anything. At that meeting we also appointed the committee with regard to the Canadian Army Dental Corps. We also decided yesterday that the annual fee shall be $5.00.

There was a motion with regard to the Miller Memorial Fund. It was moved by Dr. Jones, seconded by Dr. Black: That the executive of the Canadian Dental Association recommend to the Canadian Dental Association that the money already subscribed for the Miller Memorial Fund be turned over to the Canadian Dental Research Foundation, to be known as the Miller Memorial contribution, provided that all contributors who object to this may have their money refunded by the Canadian Dental Research Foundation on request.

The adoption of the report was moved by Dr. Conboy, seconded by Dr. Nolin. Carried.

The meeting adjourned at 5.50 p.m. until 9 a.m. Wednesday.

SECOND SESSION.

Wednesday, August 18th, 1920.

The meeting was called to order at 9.15 a.m. the Vice-President in the chair.

The minutes of Tuesday's meeting were read and, on motion of Dr. Conboy, seconded by Dr. Black, adopted.

Dr. T. Sydney Smith, San Francisco, gave an "Illustrated Talk on Oral Focal Infections and their Treatment." The discussion was opened by Dr. Dubeau and participated in also by Dr. Grieves, Dr. McDonagh, Dr. Magee, Dr. Davis, Dr. Thornton and Dr. Shantz.

An address illustrated by slides was given by Dr. Wallace Seccombe, Supt. R.C.D.S., on "Preventive Dentistry with Special Reference to Diet." Discussion was opened by Dr. Fred Husband.

The meeting adjourned at 1 p.m.

Wednesday afternoon was devoted to social affairs. The Ottawa dentists entertained the visiting members and their wives to a motor drive around their beautiful city, first visiting the New Parliament Buildings, then the Rockliffe Driveway, Government Experimental Farm, etc., and arriving at the Rideau Aquatic Club in time for an Al Fresco tea, followed in the evening by a most enjoyable dance.

THIRD AND FOURTH SESSIONS.

Thursday, August 19th, 1920.

The meeting was called to order at 9.20 a.m., the President in the chair.

The minutes of Wednesday's meeting were read and duly approved.

Dr. Clyde Davis, of Lincoln, Nebraska, gave a paper on the "Histopathology of the Cementum as Related to Pulp Canal Surgery," illustrated by lantern slides. The discussion was opened by Dr. Webster.

Dr. Conboy announced for the Executive Committee that the following committees had been appointed:

Reports of Officers—Drs. Bush, Magee, Thornton.
Credentials—Drs. Webster, Nolin, Jones.
Necrology—Drs. Bothwell, Clay, Beauchamp.

The report of the Educational Committee was presented by Dr. Webster and duly adopted.

A paper was read by Dr. George Kerr Thompson, Halifax, on "Rural Health Caravans and Pre-school Age Dental Clinics." Discussion was opened by Dr. Ryan. The paper and the recommendations contained therein were referred to the proper committee.

Adjournment for luncheon at 12.40.

AFTERNOON SESSION.

The meeting resumed at 2.30 p.m., the President presiding.

Dr. Webster addressed the convention briefly with regard to the "Western University" established at Chengtu, West China, for the purpose of educating the Chinese in medicine, dentistry and nursing in their own language.

Drs. E. C. Kirke, Philadelphia, read a paper on "The Scientific Side of the Manufacture of Dental Products involving the question of co-operation of dentist and manufacturer." The discussion was opened by Dr. Nolin.

Dr. Abbott presented the report of the Committee on the C.A.D.C., and moved its adoption. Seconded by Dr. Smith and carried. Dr. Morrison moved that the committee continue its work in putting the C.A.D.C. on a working basis, the committee consisting of Drs. Green, Thompson, Gibson, Seccombe and Abbott. On motion of Dr. Smith, the name of Dr. Bush of Winnipeg was added to the committee.

The convention was addressed by Dr. Luis Subirana, of the Dental School of Madrid, Spain.

Dean Thornton, of McGill University Dental Faculty, gave a paper on "The Pros and Cons of Fixed Bridgework." Discussion was opened by Dr. E. C. Jones, New Westminster, and participated in by Drs. Nolin and Fleming. Dean Thornton then showed some slides illustrative of his address.

The meeting adjourned at 5.50 p.m.

Friday, August 20th, 1920.

The Friday morning session was devoted to Clinics.

AFTERNOON SESSION.

The meeting resumed at 3.00 p.m., the President in the chair.

The President: Our first business this afternoon is the report of the Executive Committee, which will be presented by Dr. Grant.

REPORT OF EXECUTIVE COMMITTEE.

Moved by Dr. Webster, seconded by Dr. Fleming, that Toronto be the next place of meeting for the Canadian Dental Association.

The following nominations and appointments were made for the different officers and committees:

President—Dr. Woodbury, Dr. H. F. Whittaker.

First Vice-President—Dr. Sydney W. Bradley, Dr. Harry Abbott.

Second Vice-President—Dr. Emery C. Jones, Dr. G. K. Thompson.

Chairman of Executive Committee—Dr. F. J. Conboy.

Secretary-Treasurer—Dr. E. A. Grant.

Finance Committee—Dr. J. Bothwell, Dr. A. E. Webster, Dr. Fleming, Dr. R. G. McLean, Dr. Wallace Seccombe.

Committee on Arrangements—Dr. W. A. Black, Lt.-Col. W. G. Thompson, with power to add.

Committee on Legislation—Dr. W. D. Cowan, Dr. Bush, Dr. Clay, and the Professor of Jurisprudence of each Dental College in Canada.

Oral Hygiene Committee—Dr. F. J. Conboy, Dr. Wallace Seccombe, Dr. Harry Thompson, Dr. J. A. Bothwell, Dr. George W. Grieve.

The above committee is recommended to add the Secretary of each Provincial Hygiene Committee where such exists. In provinces which have no Hygiene Committee the Dental Board of the Province should be asked to appoint a representative.

Committee on Dental Research—Dr. Wallace Seccombe, Dr. R. Gordon McLean, Dr. Emery C. Jones, Dr. Bush, Dr. Bagnall, with power to add.

Committee on Foreign Relations—Dr. A. E. Webster, Dr. Woodbury, Dr. Eudore Dubeau, Dr. H. F. Whittaker, Dr. Wallace Seccombe.

Programme Committee—Dr. R. Gordon McLean, Dr. Percy Moore, Dr. J. A. Bothwell, Dr. Sansby, Dr. W. B. Amy.

Committee on Dental Education—Dr. Woodbury, Dr. Dubeau, Dr. Seccombe, with power to add.

The Executive Committee would like this Association to pass a resolution requesting the Committee on Legislation to support to its utmost capacity any effort which any Provincial Committee may make to improve the legislation of that province regarding dental matters, and to bring in a report at our next meeting setting forth a plan whereby the different Provincial Dental Acts may be made more uniform.

The report was considered and adopted clause by clause.

ELECTION OF OFFICERS.

In the report of the Executive Committee, Dr. Woodbury and Dr. H. F. Whittaker were nominated for President. Dr. Woodbury retired in favor of Dr. Whittaker, and Dr. Whittaker was duly declared elected as President of the Association for the ensuing term.

Dr. Sydney W. Bradley and Dr. Harry Abbott were nominated for 1st Vice-President. Dr. Abbott retired in favor of Dr. Bradley, and Dr. Bradley was duly declared elected.

Dr. E. C. Jones and Dr. G. E. Thompson having been nominated for 2nd Vice-President, a ballot was taken.

Drs. MacSween, Hodgson and Graham were appointed as scrutineers. As a result of the ballot Dr. Jones was declared elected, the ballot standing: Dr. Jones, 35; Dr. Thompson, 20.

The other appointments as named by the Executive Committee were duly approved.

REPORT OF NECROLOGY COMMITTEE.

Dr. Grant submitted the report of the Necrology Committee as follows:

The Canadian Dental Association learns with deep regret of the death of Dr. L. D. Guise, of Montreal, and wish to express their sympathy to his family and to the faculty of the Laval Dental College, with which Dr. Guise was affiliated.

The Association also recommends that the Secretary be instructed to convey through Dr. Nolin our sympathy.

We also desire to have placed on the records of the Association our sympathy for the families of the Association who lost members in the late war.

J. A. Bothwell, Chairman.

The report was adopted by the members rising in a body.

ONTARIO DENTAL ASSOCIATION—54TH ANNUAL CONVENTION, MAY 2, 3, 4, 5, 1921

The programme for this year's convention is now complete. It has been the aim of the committee in charge to make it one of broad appeal alike to both city and out-of-town practitioner.

Fortunately, it has been possible to arrange the formal opening of the new Anatomical Wing of the College, during the meeting of the Convention, which, of course, is an obvious advantage to dentists outside of Toronto. A pleasant social function has been arranged for Monday evening, in the College building, followed by clinics and demonstrations by members of the Faculty.

Probably no man deserves more credit than Dr. George Wood Clapp, for the betterment of the dentists' financial condition. His efforts in this direction have been most persistent, being carried on through his journal, the "Dental Digest," and by his writings, such as, "Profitable Practice." It is not, however, a doctrine solely of getting more money, but emphasizes equally the rendering of worth-while service. Dr. Clapp will conduct a class in dental accounting on Tuesday evening of the Convention, as well as addressing the Convention on Monday.

Dr. Seccombe's lantern lecture on Preventive Dentistry, is one that must be seen and heard to be appreciated. No one can follow this lecture without being impressed with the clearness and force of its presentation. This fact accounts for its being so deservedly popular at the National Dental Convention in Boston, the Illinois State Dental Convention at Chicago and in Detroit. Tuesday afternoon is the time.

The extension of the Progressive Clinic method to present such a subject as Preventive Dentistry is indeed a new and novel idea. It deals with dental anatomy, susceptibility and immunity to dental disease, diet and all the other factors comprising Preventive Dentistry. The Clinic is in the hands of excellent clinicians and its success and popularity are undoubtedly assured.

The Hamilton Clinic Club have a well-earned reputation for putting on a real clinic at the several conventions at which they have appeared. This year they have an entirely new presentation of cast clasps, cast saddles and gold inlays, based on work they have reecntly taken in the United States. Ours is the first convention to have the benefit of this new clinic of the Hamilton men.

The Radiographic Clinic has a strong personnel, consisting of men who have had a daily acquaintance with X-ray work for years. Especial importance is attached to radiographic inter pretation—and to what is even more important, misinterpretation—and to what is even more important, mis-easily confused, rendering the diagnosis doubtful or positively erroneous. This clinic is of especial value to the out-of-town practitioner who will be called upon increasingly to interpret the dental radiograph.

Dental Anaethesia is of growing importance and the Anaesthesia Clinic has been broadened in scope to cope with the demand for instruction in this branch of dental practice. Nerve blocking technique is fully demonstrated. Nitrous oxide administration is this year included and Dr. Jas. Cotton, who has introduced Cotton Process Ether, discusses ether anaesthesia from the dental standpoint. This clinic should prove most beneficial to the many dentists who are daily using some form of dental anaesthesia in their operative or surgical procedure.

The Committee feel that a strong programme has been prepared and they bespeak the loyal support of the profession throughout the Province in making this a record year.

THE SASKATCHEWAN TEMPERANCE ACT CONCERNING THE DENTAL PROFESSION

The following circular letter authorizes the dentists in Saskatchewan to carry a little "side line":

NOTICE—DENTISTS.

Recent Orders-in-Council confirm the following regulations for liquors to all persons holding licenses to practice dentistry in the Province of Saskatchewan:

Note changes as to the information given in circular letter dated December 18th, 1920.

1. Liquors must be secured from Boivin, Wilson & Company of Regina or Saskatoon, or the National Drug & Chemical Company of Regina or Saskatoon.

2. Orders must be sent in duplicate to the Commission for approval, one of which will be forwarded to the wholesale company named in your order.

3. Subject to the provisions of Sections 32, 33, 34 and 35 of the Saskatchewan Temperance Act, qualified dentists may keep on hand and use the following kinds and quantities of liquors in the practice of their profession:

Alcohol—Not exceeding one quart at a time. To be secured in eight ounce bottles only.

Brandy or Rye Whiskey—Not exceeding one quart at a time and in eight ounce bottles only.

4. Every order for liquor shall be sent to the Commission in duplicate accompanied by a fee of 15 per cent. of the amount of the purchase price of the alcohol and other liquors applied for.

5. Order books will be supplied all who require the same.

Faithfully,

R. E. A. Leech, Chairman.

I do not know who requested a special privilege of this kind to be granted the dental profession, nor do I know what the purpose might be. Judging from the number of circular letters from the Commission and price list from the wholesale liquor company and the size of the "Order book," it is apparent that the dentists are supposed to use a lot of liquor "in the practice of their profession." As I have stated I do not know who is responsible for such "prohibition act," but it appears to me that the wholesale liquor companies and the liquor commission are trying to encourage the use of liquors through the dental profession. We have seen the result of such a law regarding the medical profession, and I think the dental profession should refuse the responsibility of dispensing liquor in their practice.

Cabri, Saskatchewan.

H. B. Ness.

CANADIAN DENTAL ASSOCIATION FINANCIAL STATEMENT

RECEIPTS, 1920.

Jan. 1st	Cash on hand	$ 540.00
June 30th	Bank interest to date	7.35
Aug. 24th	Registration 208 members at $5.00	1,040.00
Dec. 22nd	Dr. Oliver receipts from exhibitors	1,082.85
Dec. 31st	Interest to date	6.79
		$2,676.99

EXPENDITURES.

Mar. 25th	Local executive cheque	$ 100.00
June 24th	Local executive cheque	100.00
July 19th	Ambrose Kent & Co., badges	48.96
Aug. 18th	Dr. Clarence Grieves	150.00
Aug. 19th	Dr. T. Sydney Smith	100.00
Aug. 20th	Dr. Clyde Davis	150.00
Aug. 20th	Mr. Boyd, running lantern	12.40
Sept. 3rd	Coniffe & Co., signs for convention	6.50
Oct. 20th	Mr. Young, reporting convention	165.00
Oct. 20th	Miss Faith, Assistant Secretary	25.00
Oct. 22nd	Dadson Merill Co., printing	412.76
Dec. 2nd	Dr. McCaughey, stamps, etc.	3.70
Dec. 22nd	Secretary, small accounts paid from personal cash and expenses to executive meeting in Toronto	39.68
Dec. 31st	Cheque to Dr. Grant	1,362.09
		$2,676.99

This account has been audited and found correct.

(Signed) C. H. JUVET, D.D.S.
S. G. MCCAUGHEY, D.D.S.

Dr. T. Sydney Smith would only accept $35.00 of the honorarium given to him, and donated the balance, $65.00 to the Canadian Dental Research Foundation.

ANNOUNCEMENT OF EXTENSION COURSES IN DENTISTRY

With a desire to be of the greatest possible service to the people of Ontario, the Royal College of Dental Surgeons announces a scheme by which lectures, clinics and demonstrations related to dentistry and public health may be given to any society or group of persons who may desire such service. The College desires to extend its teachings beyond the class room to every part of the province.

ARRANGEMENT FOR THE SERVICE

All correspondence concerning the course should be addressed to the Royal College of Dental Surgeons, 240 College St., Toronto.

Arrangements for a lecture, clinic or demonstration must be completed at least two weeks before the date upon which it is to be given.

WHAT IT WILL COST

The organization or persons who arrange for a lecture, clinic or demonstration will be expected to pay the lecturer's traveling and living expenses for the trip.

The College will pay the lecturer a fee of $25.00 for each visit to partly reimburse him for the time lost from his regular duties. Consideration will be given for unusual expenditure of time in long trips or extra days.

LIST OF SUGGESTED SUBJECTS

A list of suggested subjects which may be of assistance in planning a course of lectures, or for a single lecture, clinic or demonstration, will be forwarded upon request.

LECTURES NOT LISTED

Any Dental Study Club, or group of persons who wish a lecture or a course of lectures on a subject not listed, should write the College, stating what is wanted, and special arrangements will be made, when possible, to meet the desires.

ANNUAL MEETING OF THE CANADIAN SOCIETY OF ANÆSTHETISTS

The Canadian Society of Anaesthetists has been accorded the distinction and honor of a joint meeting with the Ontario Medical Association, the Interstate Association of Anaesthetists, and the New York Society of Anaesthetists, This, the first annual meeting, will be held in Niagara Falls, June 1-3, at the Clifton House.

The Section of Anaesthetics of the Royal Society of Medicine are sending Dr. H. Edmund G. Boyle, O.B.E., anaesthetist and lecturer on anaesthetics at St. Bartholomew's Hospital, London, England, as the representative to address our Society.

An interesting and instructive programme is under preparation. There will be a joint session of all of the organizations on the afternoon of Thursday, June 2, during which papers on anaesthesia, of pertinent interest to those in attendance, will be presented. One feature of the meeting will be a case report session.

All anaesthetists, surgeons, specialists, dentists and research-workers, interested in the advancement of the science and practice of anaesthesia, are cordially invited to attend the Niagara Falls meeting and find out how their needs for progress are being met.

The following nominations have already been made for 1921-1922:

President, William Webster, M.D., Winnipeg, Man.; vice-president, David H. Arnott, M.D., London, Ont.; secretary-treasurer, Wesley Bourne, M.D., Montreal, Que.; executive committee, Thomas R. Hanley, B.A., M.D., Toronto, Ont.; Charles LaRocque, B.A., M.D., Montreal, Que.; F. H. McMechan, M.A., M.D., Avon Lake, Ohio; Walter L. Muir, M.D., Halifax, N.S.

Members are requested to submit further nominations, and their attention is hereby called to by-law No. 6.

Those interested are invited to communicate with the secretary-treasurer, Dr. Wesley Bourne, 34 St. Mark Street, Montreal, Que.

Editorial

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VOL. XXXIII. TORONTO, APRIL 15, 1921. No. 4.

THE C. N. JOHNSON BANQUET

The graduates of the Chicago College of Dental Surgery and the friends of Dr. C. N. Johnson tendered him a banquet at the La Salle Hotel, Chicago, April 11th, 1921. A feature of the banquet was the presentation by the alumni of the Chicago College of Dental Surgery of a bronze bust of Dr. Johnson to the College. Many other presentations of mementoes were made at the banquet; the faculty of the college, the faculty of North Western Dental School, the dental faculty of University of Illinois and private friends. The attendance was the largest of any testimonial banquet given to a dentist in Chicago. Over fifteen hundred were seated.

The toast list was short, appropriate and fitting a great occasion. The addresses were pertinent, dignified and eloquent. There were hundreds of letters of remembrance and good will from friends all over the world. Canadians feel a special pride in Dr. Johnson because he has always remembered his native country and its people in a kindly spirit.

The following is an interesting part of the programme of the banquet.

SPEAKERS.

Dr. P. G. Puterbaugh, Chairman. Dr. Donald M. Gallie, Toastmaster. Dr. Henry E. Friesell, Pittsburgh, Pennsylvania, "Dental Education and the Need of Trained Dental Teachers." Dr. William A. Evans, Chicago, Illinois, "Johnson the Citizen." Dr. John V. Conzett, Dubuque, Iowa, "Johnson the Practitioner." Dr. Wallace Seccombe, Toronto, Ontario, "Johnson and His Native Land." Dr. Gail M. Hambleton, Chicago, Illinois, Tenor Solo, "The Awakening," Coates. Dr. Otto U. King, Chicago, Illinois, "Johnson the Author and Editor." Dr. John P. Buckley, Los Angeles, California, "Johnson the Teacher." Dr. Charles Nelson Johnson, Response.

DR. JOHNSON'S ORIGINAL ARTICLES AND EDITORIALS.

Year	Original Articles	Editorials
1888	2	
1889	1	
1890	3	
1891	7	
1892	1	
1893	2	9
1894	4	30
1895	2	
1896	6	7
1897	3	7
1898	3	4
1899	3	3
1900	6	8
1901	3	7
1902	6	2
1903	6	20
1904	4	31
1905	7	23
1906	6	28
1907	4	26
1908	6	29
1909	7	32
1910	7	25
1911	6	26
1912	11	25
1913	4	29
1914	9	26
1915	6	24
1916	3	23
1917	4	27
1918	1	25
1919	2	11
1920	2	20

BOOKS—"Principles and Practice of Filling Teeth"—1900. "Text Book of Operative Dentistry"—1909. "Success in Dental Practice"—1903. "The Adventures of Hal Byrne"—Serial. "The Little Cannuck"—Serial. "The Hermit of the Nonquon"—1893. Numerous short stories in magazines. "Poems of the Farm"—1901. "The Hand Clasp"—1919. Gold Medal—Theory and Practice—R. C. D. S.—1881. Fellowship medal of the Dental Society of the State of New York, 1915.

CHARLES NELSON JOHNSON.

Born, Brock, Ontario, March 16, 1860.

Graduated Port Perry High School, 1876.

Graduated Royal College of Dental Surgeons, Ontario, 1881.

Practiced two years in Collingwood, Ontario.

Graduated Chicago College of Dental Surgery, Chicago, 1881.

Practiced dentistry in Chicago, 1885 to date.

M.A. Degree Lake Forest University, 1897.

Demonstrator of Anatomy, Chicago College of Dental Surgery, 1886.

Adjunct Profession of Operative Dentistry, Chicago College of Dental Surgery, 1889.

Professor of Operative Dentistry, Chicago College of Dental Surgery, 1890 to date.

Associate Dean, Chicago College of Dental Surgery, 1906.

Dean of Students, Chicago College of Dental Surgery, 1907 to date.

Editor, "The Bur," 1896 to 1902.

Associate Editor "Dental Review," 1893.

ditor "Dental Review," 1894. 1902 to 1918.

Contributing Editor "Oral Health, 1919 to date.

Editor "Desmos," 1920 to date.

President of the Illinois State Dental Society.

President of the Odontographic Society.

President of the Chicago Dental Society.

President of the Odontological Society.

Supreme Worthy Master of the Delta Sigma Delta Fraternity.

Supreme Grand Master of the Delta Sigma Delta Fraternity.

Member Chicago Dental Society.

Member Illinois State Dental Society.

Member National Dental Association.

Member Odontological Society.

Honorary Member Nebraska State Dental Society.

Honorary Member Iowa State Dental Society.

Honorary Member Kansas State Dental Society.

Honorary Member Southern Minnesota Dental Society.

Honorary Member Ontario Dental Society.

Honorary Member Isaac Knapp Dental Coterie, Fort Wayne.

Honorary Member Detroit Dental Society.

Honorary Member St. Louis Society of Dental Science.

Honorary Member Odontological Society of Victoria, Australia.

Honorary Member Dental Graduates Society of Victoria, Australia.

Honorary Member Odontological Society New South Wales, Australia.

Honorary Member and Fellow of the New York State Dental Society.

Associate Member of the First District Dental Society of the State of New York.

Associate Member Saskatchewan Dental Association.

MY HOUR.

There's an hour not recorded by the clocks of standard time,
Not remembrancer of summer nor a hint of winter's rime,
It's an hour quite creative—by a myriad fancies fed,
When the embers slowly smoulder, and the folks are all in bed.

Then I'm king in my dominion, with a little desk my throne,
Swarmed about by countless subjects, though I seem to sit alone;
And I hold such sweet communion with the play-folk of my head,
When the night winds softly murmur and the real folk are in bed.

Nothing but a pen and paper, yet a world lies at my feet,
Waiting only touch of magic to portray the scene complete;
Visions weird and visions wondrous, like a message from the dead,
Stealing softly through and through me, while the dear ones are in bed.

Harmless ghosts and little goblins—children of another clime,
Some sedate and others sportive—others lowly, some sublime;
All are weaving with a fabric fine as any silken thread,
Tales and legends of the elf-land while the folks are all in bed.

Time is nothing but a shadow, space is spanned by winged thought;
All the myriad things of daytime now appear as things of naught.
All the real and all the unreal, thus mysteriously wed
By this mystic ceremony, while the folks are all in bed.

Thus I sit in waking dreamland as the moments steal away,
Quite unconscious, while the clock is striking in another day.
What though half I think's unwritten, and the other half unread,
Priceless is this cherished hour when the folks are all in bed.

—*Charles Nelson Johnson.*

Editorial Notes

The late Dr. Dorland, Oakville, Ontario, left an estate of $26,581.

⁂

The Alberta Dental Association will meet in Edmonton July 20th to 23rd, 1921.

⁂

The Ontario Dental Society will hold its annual meeting in Toronto, May 2, 3, 4 and 5.

⁂

According to the "Express," London, a Royal Dental Corps has been organized.

⁂

The dental students of Dalhousie University held their annual dance, March 10, 1921.

⁂

Dr. F. Proctor, Victoria, B.C., died suddenly March 29th, 1921. Dr. Proctor was born in Kingston, Ont.

⁂

Dr. O. S. Clappison and S. P. Moore, Hamilton, provided the programme for the local society at its last meeting.

⁂

Dr. Clifford Casselman, Morrisburg, Ontario, died April 3, 1921. Dr. Casselman was but 32 years old. He leaves a wife and one child.

⁂

The Dentistry Act of British Columbia is being amended to increase the fee for admitting dentists through the Dominion Dental Council.

⁂

Dr. C. H. Riggs, who has practiced dentistry in Toronto for about forty years, died of lobar pneumonia in the General Hospital, March 23, 1921.

⁂

The British Columbia Dental Association and the Washington Dental Association have joined together to hold a dental convention and post graduate course.

⁂

The Dental Society of Dalhousie elected the following officers for 1921 and 1922: President, Howard W. McDonald; vice-president, Miss Hazel Thompson; secretary-treasurer, Sidney Florian; executive committee, Miss Angela Magee and Mr. Somers.

THE DENTISTS AMENDING BILL—GREAT BRITAIN

It is not proposed to extend the present scope of dental treatment. The main provisions of the Bill are: (1) No person who is not a registered dentist shall practice for fee or reward. This clause does not, however, affect the practice of dentistry by qualified medical men, nor yet the "extraction of a tooth" by a duly registered pharmaceutical chemist or duly registered chemist and druggist when the case is urgent and no doctor or dentist is available, "and the operation is performed without the application of any general or local anæsthetic." "Minor dental work" in any public dental service may be carried on by "any person" under the personal supervision of a registered dentist in accordance with the provisions to be laid down. This section comes into force one year after the "commencement of this Act," or at a period not exceeding two years. (2) A Dental Board is to be set up with perpetual succession and a common seal. There will also be a registrar. (3) The Dental Board will make regulations to admit to the register certain persons who are not at present qualified. These must be 23 years of age and of good character, and must have been (a) for five years immediately preceding the commencement of the Act engaged as a principal means of livelihood in the practice of dentistry in the British Islands or have been admitted to membership of the Incorporated Dental Society not less than one year before the commencement of the Act; or (b) for five years immediately preceding the commoncement of the Act engaged as a principal means of livelihood in the occupation of a dental mechanic in the British Islands. In this latter case the applicant for registration must within two years from the commencement of the Act pass the prescribed examination in dental mechanics and within ten years from that date undergo the prescribed training and pass the prescribed examination in dentistry. Any person who within two years passes the prescribed examination in dentistry and who was earning his principal living as a dentist at the commencement of the Act will be treated as having engaged for five years in dentistry.

The same treatment will be given to any duly registered chemist who was in substantial practice as a dentist and was doing dental operations provided that he gives an understanding that within five years from the date of registration he will cease to carry on the two occupations of chemist and dentist concurrently. The board may dispense with any of the requirements in cases of ex-Service men provided that the public interest is not affected. (4) A body corporate may practice dentistry if it carries on no other business, and if all the directors, managers, and operating staff are registered dentists. There are certain provisions, however, which slightly mitigate this clause.

INCOME TAX AND HOW TO FILL OUT

384 McLaren Street,
Ottawa, March 24th, 1921.

Dr. A. E. Webster,
Dean Royal College of Dental Surgeons.

Dear Doctor:

Mr. Breadner, Commissioner of Taxation, who had promised to be with and address the Ottawa Dental Society on Monday, March 21st, was unable to be present, owing to the fact that the "Consolidation" of Income Tax was before the House that night.

Mr. C. Fraser Elliott, solicitor to the Department of Taxation, came in Mr. Breadner's stead and gave a most instructive address. Mr. Elliott, by virtue of his position, really gives the final ruling on the matters we wished to bring before him.

(Mr. Elliott is no stranger to dentistry, he has three brothers practising.)

He gave a most delightful historical sketch of Income Tax Acts in the British Isles, United States and Canada since its inception in Britain in 1842 following the Crimean War, in the United States in 1863 following the Civil War and in 1917 in Canada during the late cataclysm, showing the reasons for its necessity, the various and many changes necessary in the act, and the comparative results, which show the greater simplicity and leniency of Canada's Act.

He then took up the Income Tax form showing that if each question or item is taken in its turn and answered that one cannot go wrong, provided the "whole truth" is told, emphasizing the absolute necessity of declaring your whole income, making your claims for deductions afterwards, and pointing out that it is best to declare on a cash basis, as the accrual basis requires more bookkeeping and arrives at the same results.

It might be well to point out as separate items his rulings.

No expenditure is allowed which is not directly for the production of income.

There is no interest allowed on capital.

Brains, hands, eyes, personality and health, being our capital, no interest is allowed on money spent to acquire and maintain these. This money is regarded as an investment in capital stock.

If money is borrowed to pay for the equipment, interest is allowed on this borrowed money until it is paid back.

There are two classifications of income, main and secondary.

Dentistry being our main income that income *cannot be reduced,* as losses sustained in transactions not connected therewith.

Secondary income, from stocks, bonds, rentals, etc., can be reduced by offsetting such income by taxes and carrying charges paid out on respect of the revenue and non-revenue producing property.

If a ''flyer'' be taken in real estate or bonds occasionally, the profit from that flyer is not regarded as income but goes into capital stock, nor can the loss from these ''flyers'' be classed as expenses and deducted from your main income. If your ''dabbling'' assumes such proportions that you may be said to be engaged partially in that line of endeavor your income from these is regarded as part of your secondary income.

The department takes the ground that they care not where your income went, you had such and such an income and are taxable on that amount.

Rent and heat are allowed.

Janitor, light, power, gas and water are allowed.

If included in your renting contract, not allowed.

Supplies, drugs, precious metals, etc., allowed.

Assistants' salaries allowed.

Office telephone allowed.

Laundry allowed.

Uniform costs allowed.

Stationery, printing, postage, etc., allowed.

Magazines and periodicals, if used within the year, allowed.

Library actually in use in the practise 10 per cent. depreciation allowed.

Laboratory charges allowed.

Borrowed money used in business, interest allowed.

Depreciation of equipment, 10 per cent. per annum allowed.

Specialists' equipment of perishable nature or short lived use, special depreciation may be adjusted and allowed.

(e.g.) X-ray machines 20 per cent. per annum.

Business tax on the property or part of property used not allowed.

City, provincial and Dominion income tax not allowed.

Donations and office philanthropy not allowed.

(Last two regarded as disposition of income.)

Expenses to dental convention and society fees not allowed.

(Regarded as addition to capital.)

Fee to society which gives license to practice allowed.

(e.g.) Ontario annual fee to the R.C.D.S.)

Fire insurance on equipment allowed.

Life, sickness, accident, insurance not allowed.

(Regarded as personal expenditures)

Money derived from life, sickness or accident insurance exempt from taxation.

Professional liability insurance not allowed.

Monies expended in defence of suits for malpractice or adverse judgments paid allowed.

Auditing, collecting and bookkeeping expenses allowed.

Decoration of office, if paid by dentist, allowed.

Repairs to office, if paid by dentist, allowed.

Alterations to office not allowed.

(Regarded as additions to capital expenditures.)

Transportation charges not allowed.

(The department doesn't care whether you walk or ride, that is a personal affair in their ruling.)

Interest on monies expended for education not allowed.

Interest on monies expended for equipment not allowed. Depreciation is allowed.

(Regarded as capital investments.)

Bequests not regarded as income. May be subject to succession dues but not to income tax.

The matter of striking a flat rate of 50 per cent. receipts as expenses was brought up and advised against on the ground that it really was class legislation and that all callings would have equally as good a right to ask for a flat rate, for example, the farmers might ask that the earning power of an acre of ground be declared and then they would base their income on that amount multiplied by the number of their acres.

Mr. Elliott here cited the case of western farmers who might incur heavy expenses in sowing this year's crop and obtain no grain and incur the same amount again next year and get a crop, on which they paid income tax deducting that year's expenses only.

In making up your summary put in your whole income, make your total deductions, deduct the exemption of $2,000 for a married man and $1,000 for a single man, and strike the tax payable on this amount; if income be below $5,000 it is 4 per cent. of the amount; over $5,000 the rate is stated on the income tax returns sheet.

From this amount deduct $8 for each dependant child under 18 years of age or each child of your own under 21 years of age if mentally deficient, or $8 for each dependent parent. Unfortunately no provision is made for mentally deficient dependents other than these.

The tax is payable in full April 30th, but may be paid in instalments as provided in the act.

Any excess tax paid will be returned to you.

Any insufficient tax payable bears interest on the amount of the disparency at the rate of 6 per cent. per annum from April 30th to the time of payment.

If you live and practice in the same house or apartment you may charge up a proportionate amount of the rent, gas, electricity, etc., based on the proportionate amount you use as your office in its relation to the whole area.

I think you will agree with me that the address, questions, and explanations were really most exhaustive and that Mr. Elliott's presence, ability and desire to be of service to the dental profession in clearing up these difficulties are much appreciated.

I have submitted this, my report of the meeting to Mr. Elliott who has very kindly verified the presentation of his rulings.

I am sending this report to you so that if you deem it advisable it may be passed on to the profession.

Fraternally yours,

S. G. McCaughey.

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Original Communications

DIET AND DENTITION AND THE INFLUENCES OF INTERNAL SECRETIONS IN RELATION TO DENTITION

W. J. GIES, M.S., Ph.D., Sc.D., New York, N.Y.

Delivered in the Physics Building, University of Toronto, Wednesday, April 6, 1921, under the auspices of the Department of Dental Research.

PROFESSOR MCKENZIE:—Ladies and gentlemen; Sir Robert Falconer has requested me to convey his very sincere regret at his inability to take the chair this evening. Sir Robert is Chairman of the Committee on Dental Research of the University of Toronto, a committee which recently commenced the prosecution of research in dentistry. The funds for this work have been supplied by the Canadian Oral Prophylactic Association, which is responsible for Dr. Gies' presence here to-night.

A great many of the audience know, of course, all about the aims and objects of the Oral Prophylactic Association, but for the benefit of those who do not know, I would like to mention a few of their activities.

Some time ago this Association began an educational campaign in connection with oral prophylaxis, and in order to render it effective they found it necessary to provide various substances, such as tooth brushes, tooth pastes and mouth washes, and became incorporated. Under the terms of their incorporation, however, none of the funds which accrue from the commercial activities they undertake can go to the Association, but must be expended in connection with the educational effort in dental prophylaxis or dental hygiene, or for the purposes of research.

They have carried on a very extensive propaganda for dental hygiene in Ontario and the Maritime Provinces, and a great deal of the work which has become possible in the various provinces has been initiated by this Association.

Their policy has been one entirely of education, and as soon as the provincial sanitary authorities see their way to take over the work, they hand it to them, and carry on other lines of educational work and development. They are therefore performing a very important work in hygiene in this country.

Some two or three years ago an offer was made to place at the disposal of the governors of the University of Toronto a sum of money to carry on research in dental questions. The governors arranged to establish a laboratory for that work in the Pathological Building, and from the funds which the Association placed at the disposal of the governors we were able to obtain the assistance of a trained worker, and that work is going on at the present time—possibly it is almost ready for publication—and they are pressing to extend the work still further, and it is quite probable that within the next five years quite a large mass of research in dentistry will be carried out under these funds.

For the present year the expenditure on research has been something like $3,500, and the Association has promised the committee that that is only a beginning.

To-night's meeting is part of their educational movement, and they have been fortunate enough to secure the assistance of Dr. Gies, of New York, to lecture to this audience. Dr. Gies has been connected, as a bio-chemist, with the subject of dental research for a good many years, and I am sure you will all be as delighted as we are to hear what he has to say.

I have much pleasure in introducing Dr. Gies.

Dr. Gies:—Mr. Chairman, ladies and gentlemen, it gives me very great pleasure indeed, to accept the invitation to address this meeting more or less informally on a subject primarily of dental interest, and also of interest to medical men and women, and, of course, to all who are interested in the prevention of disease, for that naturally is a primary object of the medical and dental student, practitioner and observer.

To-day I have had the privilege of attending several dental meetings, at each of which I spoke to some extent with what remained of a very poor voice when I arrived, and I am not, therefore, confident that I shall be able to reach those who are seated the farthest away from the table.

The general subject of diet and dentition, and the influences of internal secretions in relation to dentition, is so extensive that it will be impossible for me in the time at our disposal this evening, to refer to any part of it in detail, unless we agree to some restriction in the choice of phases of the general subject, and so, after reflection, I have decided to endeavor to discuss this subject primarily from the standpoint of diet in its relation to the development and prevention of dental decay, and to the internal secretions, and also from the standpoint of the causation and prevention of decay of the teeth.

In other words, to regard decay of the teeth as the essential object of interest, with diet and the influence of internal secretions so far as we may represent them in this relation as the two factors for discussion.

It must be obvious to any observer that a diet which is inadequate in supplying the things of which a diet is composed must have, by that inadequacy, a profound influence on that part of the body.

We know that the teeth are composed very largely of calcium and phosphate, and to say, for the purposes of general discussion, that the tooth is largely calcium phosphate, is quite approximately accurate.

The mineral part of the tooth is almost entirely composed of calcium phosphate in various complex combinations.

It is obvious that a diet which fails to present an adequate amount of calcium or of phosphate must fail to properly nourish the body for the production of the teeth in a normal way. That is so obvious that it would seem to need no more than mere mention to make the point clear and the acceptance of it a matter of course.

When, on the other hand, the diet is deficient to only a slight degree in any one particular ingredient, such as calcium or phosphate, then it is possible, we might suppose, for a part like the teeth, consisting of calcium and phosphate, to obtain all they need by receiving a larger share of the diminished supply, and it might not necessarily follow that if the diet is inadequate to a small degree in calcium or phosphate, the teeth, as distinguished from the bones, for instance, would suffer.

Then it is obvious also that if the diet is inadequate in calcium and phosphate during the growing period, there may be deficiency in the development of the tooth that could not occur after the tooth is formed. It might be assumed that if the tooth is formed and it has received all the calcium and phosphate it needs during the period of construction, nothing is needed thereafter to keep it in repair or to suitably develop it along whatever line may involve the addition, solely, of calcium or phosphate.

Then, again, it might be logically assumed that even though a tooth does receive all the calcium and phosphate it needs during the period of construction, if at any period later in life there is a deficiency of calcium or phosphate in the diet there may be a deficiency of calcium or phosphate in the saliva, if we further assume that a normal content of calcium and phosphate in the saliva is required to keep the enamel of the tooth normal.

These suggestions of logical alternatives in our assumptions represent the various points of view that different investigators have taken.

One investigator has found that when calcium and phosphate are deficient to some extent, the bones suffer, but the tooth may not suffer in its development.

Another finds that the tooth may become deficient in character even when late in life the calcium is deficient.

The particular investigator I have in mind believes that calcium has something to do with a steadily developing hardness, a compacting of the surface of the enamel to some extent throughout the life of the tooth.

While many do not agree with this view, it is a possible factor in the food requirement for the maintenance of the normal structure of the tooth.

We have no particular, definite knowledge of the needs of the tooth in terms of protein requirement, or carbohydrate requirement, or fat requirement. We know nothing that would enable us to say that a diet must have in it certain amounts of protein or carbohydrate or fat to keep the tooth normal.

We have learned, however, in recent years, that one of the vitamines, in fact, apparently several kinds of vitamines are required in the diet during the growing period if the bones in the body in general, and the jaws and also the teeth are to develop in a normal way.

The so-called fat soluble vitamine, a vitamine which is especially common to fatty tissues, and in fatty extracts, particularly in egg yolk and in milk, is a vitamine that has much to do with maintaining normal calcification of the body, and normal production of the enamel substance of the teeth.

Mrs. Mellenby, of London, has made notable contributions in this particular field. She has found that a diet apparently adequate, but purposely made deficient in fat soluble vitamine, results in an anomalous development of the jaws of teeth and animals, and also malformations of various kinds, including abnormality of the position of the teeth.

On the other hand, when similar animals that are thus found to be responsive to this inadequacy are, in control experiments, given the same diet, plus a suitable fat soluble vitamine, then the teeth and jaws develop in a normal and strictly physiological manner.

Of course you are aware of the fact that practically all of the internal secretions and also the so-called vitamines are open to more or less criticism because of the interpretations placed upon the results, and while it may be said that some do not agree with the statement that the absence of the fat soluble vitamine causes deformation or inferior formation of the teeth, at all events inadequacy of the diet in at least a general way does cause this deficiency in formation, in alignment and in adjustment of the jaws.

In connection with this, Dr. Howe, of the Forsyth Institute, has conducted many experiments on animals, in which he has made the individual animals quite abnormal in the bones and in the teeth by feeding them diets notably insufficient, lacking in one respect or another.

A paper soon to be published in the "Journal of Dental Research"—it is just about to go into the mails—presents fifty illustrations of the effects on the bones of the jaws and teeth of guinea pigs and rabbits, given diets that have been made inadequate with reference to what he calls the three kinds of vitamines.

He has fed these animals diets that are deficient in the fat soluble vitamine, in the anti-ricketic vitamine (the one that prevents rickets in accordance with the general impression at present), and also deficient in that type of vitamine which is presumably able to prevent the development of scurvy.

The results presented by Dr. Howe, and ascribed by him to deficiency of the three vitamines, are again open to the criticism that the interpretation may not appeal to all who are interested in this kind of work, but certainly the observation is there, and deficiency of diet, however induced, is plainly a factor.

I happen to have with me copies of the illustrations in Dr. Howe's paper as they are about to go into the mails, and I have put at the bottom of them the various legends so that in effect my presentation of them to-night becomes simply a presentation of an advanced copy of a journal now ready to be distributed, and I think you will find in examining these illustrations some very striking facts that Dr. Howe has noted.

(The lecturer handed several copies around.)

I have in my hand one illustration in which he describes a carious condition of the teeth of the guinea pig as due to the deficiency of the three vitamines to which he refers.

He also shows how there may be deficiency followed by insufficiency and calcareous developments that seem to repair the malformation as far as that is possible after they have once been induced.

He finds that in the guinea pig there are various deficiencies in the alveolus, the immediately surrounding structures, and that the teeth even tend to grow in a rainbow-like formation across the entire jaw from one side to the other, and he alludes in general to the presumptive effect of deficiency on this particular condition.

As I said before, we may disagree with Dr. Howe on the details of his interpretation. My own belief is that his diets are deficient in calcium and in phosphate; but if that is true it still is correct to say that deficiency of certain essential things in the diet modifies materially the structure of the teeth—modifies the structure of the bones.

A very interesting finding recently made by Dr. Sherman, of Columbia University, who is one of my old immediate colleagues, might further be recited.

Dr. Sherman, after feeding rats deficient in phosphate, found that they developed anomalies in the bones analogous to the disease known as rickets. The figures made it plain, in the estimation of the pathologists, that here was a case practically the same as the development of soft bony ricketic formation.

The addition of a small amount of phosphate (di-potassium hydrogen phosphate) to the diet on which the ricketic lesions occurred, was followed very promptly by a return to normal of the animals affected, and a diet of that kind did not permit of development of ricketic changes in the animals thus treated.

It would therefore appear that experimental rickets in rats may be produced by feeding a diet otherwise completely adequate but deficient in phosphate, and the disease may be cured or may be prevented on such a diet by the direct addition of phosphate to the mixture.

All of which is the same as saying, of course, that unless the diet contains those things that are strictly essential for the construction of the tooth, the tooth has nothing on which to be constructed.

When it is grossly deficient, this is very obvious; when it is only slightly deficient it may not be very obvious.

I have also in my possession an illustration from a paper by Doctors McLenden, Robb, Meads, and others, of the University of Minnesota, which will appear in the fourth number of the Journal of Dental Research just about going to the mails.

They have studied the effect on the teeth of diets deficient in a particular vitamine, the so-called anti-scorbutic, the vitamine that is only eaten by us in fruits such as oranges and various vegetable additions to the diet.

They noticed that on this particular diet the animals tended to lose calcium from the body; in other words, they failed to retain normally the calcium they otherwise would retain; they lose it in spite of the adequacy of the diet. When there is not enough of this particular vitamine, then, no matter how the animal's health is in general, there is loss in the diet. This loss is shown after a time in scurvy, but long before the symptoms of scurvy appear, the loss of calcium is noticeable and very appreciable.

When scurvy develops, among other symptoms are, of course, loss of normality and loss of self-repair, or at least absorption of something out of the periodical tissue, and the tooth no longer remains normal in its socket and becomes loose. As the tooth of the guinea pig steadily grows (the size of tooth I am referring to) the calcification there is deficient and the tooth becomes soft and even pliant.

They therefore conclude from their experiments that if the diet is deficient even in the one vitamine, the anti-scorbutic vitamine, the teeth are deficient. They even go so far as to say that a diet may be deficient in anti-scorbutic vitamine without causing scurvy and yet give dental trouble and be responsible for conditions analogous to those in pyorrhea.

Among other things they noticed was the singular increase in the amount of dentine produced in the pulp cavity of the teeth of the animals given a diet deficient in vitamine; they found that the dentine encroached on the pulp and tended, in short, to replace the pulp with a solid mass of calcareous matter.

With the loss of calcium from the body, with deficiency of calcium in the surrounding tissue, it seems rather remarkable that there should nevertheless be a production of osteo-dentine in the pulp.

They offered various suggestions to explain this, but in essence it is that it is part of the general perversion of calcium metabolism induced by the deficiency in this vitamine.

On the other hand, they found when they introduced orange juice into a diet (the orange juice contains the vitamine) the animal is restored unless it is hopelessly perverted in this respect or the case has gone too far.

Of course, it has long been known that lime juice or fruit juices in general, added to an otherwise deficient diet, will prevent scurvy which may otherwise happen to occur.

Travelers who have covered long distances on board ship, say on polar expeditions, have been among those to suffer from scurvy, through consuming preserved foods with no fruit or vegetable ingredients in them to give to the total food mixture vitamine of this kind, or at all events something which is equivalent to what is called this vitamine.

On the other hand, when it was found that scurvy did occur on certain diets it was also found that the addition of lime juice, orange juice, vegetable extracts, and so on, in their diet, produced normal metabolism.

These investigators, McLenden and others, emphasize that the addition of these elements to the diet, according to their opinion (due to the anti-scorbutic vitamine) prevents what otherwise might occur if that kind of material is deficient.

In their study they allude to the various kinds of diet that may be suitably used as antiscorbutics in determining the amount of heat and so on, and present numerous suggestions of interest to all of us as to the presence of vitamine to maintain the highest degree of anti-scorbutic value. They allude to the fact that such materials as canned tomato, orange juice and various vegetable preserves that are not over-heated, contain all the materials which, added to the diet, supply to the growing individual as well as to the adult a sufficient amount of what is known as the anti-scorbutic vitamine.

In regard to this paper, as in the case of Dr. Howe's, there is, I believe, a normal tendency to disagree with the authors in their interpretation as to the cause of the anomaly. It is deficiency of diet, but whether it is the particular kind of deficiency to which they refer does not appear to be perfectly established. It might be due (and until they prove it otherwise it is fair to say it is), to other deficiencies which they have not noted or have failed to prevent in the diet of all they have studied, the optimum of all the normal necessary ingredients. In reducing the anti-scorbutic vitamines experimentally, they have induced other ingredients that have a bearing on the subject, but we are concerned to-night with the broad general statement that deficiency in some kinds of diet involves deficiency in the production of the tooth.

I said at the outset I would give special attention if possible to the relation of diet to the causation and prevention of dental caries. My remarks up to this point have alluded to the influence of diet on the structure and character of the tooth in general, that the enamel, the periodontal tissue, the pulp and the tooth itself, have all been found deficient in character on various deficiencies in the diet.

What do we know about the relation between the composition of the enamel and the character of the diet? Here our knowledge is essentially a matter of inference and not direct observation.

In the first place, it has been very difficult to study enamel successfully when separated from other parts of the tooth. As a rule we find that dietary deficiency is more promptly registered on general composition and on the quality of the periodontal tissue than it is on the enamel so far as we have been able to see.

Various efforts to determine that deficient diets diminish the quality of the enamel have brought out several facts of special interest in this connection that might be mentioned.

Several years ago, in an effort to determine the effect of deficiency of diet, we made the following observations which are published in one of the dental journals, and apparently never seen by any one of the active scientific investigators ever since. It seems to be the habit of dental investigators to look for the original information that applies to dentistry in some other journal than a dental one.

We found at that time that a diet of meat, sugar, cracker meal and lard, ordinarily considered to be poor in calcium, failed to affect the development in the enamel composition of the teeth of three puppies during a feeding period of one hundred and twenty-seven days. There was no effect whatever on the composition of the enamel, but that diet was adequate, it had in it all that growing dogs need except an abundance of calcium.

We noted that although ordinarily considered to be deficient, a small amount was sufficient. After giving the dogs a diet consisting of a small proportion of milk (that one ingredient being relatively small), meat, sugar, cracker meal and lard, calculated to provide less than half the amount of phosphorus physiologically required by dogs, we found by studying the output of phosphorus that they needed an extra amount; we gave them a diet otherwise adequate except the amount of phosphorus in it as phosphate. When that was done there was a slight degree of de-mineralization of the incisors of two of the puppies out of three at the end of 149 days.

At this period the incisors and canines of these puppies appeared more worn at the tips than the corresponding teeth of the control animals; in other words they were somewhat deficient in mineralization.

We tried to determine in this case whether the de-mineralization occurred in the enamel or the dentine, and seemed to get the result that indicated there was lowered phosphate content in each part.

In another experiment, having learned what we did about the apparent adequacy of a small amount of calcium, we tried this experiment: young rats were provided with three milligrams of calcium per animal per day for a period of from seventy to eighty-five days. This ration was normal in all respects, but they exhibited loss of vitamines, stunted growth and poor development of the whole organism. The bones and teeth were unusually short and fragile, and there was very pronounced de-mineralization of both teeth and bones: control rats 20 per cent. bone; ash yield, 8.5 per cent.

When we tried the same experiment, dealing with phosphorus again as phosphate, and reducing that to seven milligrams on rats and continuing the growth for seventy to ninety days, the animals were stunted, and there was poor development in the bones and the teeth, but the effects were not so severe as in the case of calcium deprivation. There was a distinct loss of a mineral character from the teeth and bones, more pronounced than that of phosphorus.

These findings, published in 1914, are in accord with those recently published by Sherman on the same point dealing with rickets.

We tried deficiency of magnesium, and found that when a ration was poor in magnesium, providing only 1 2-10 milligrams in the form of magnesium phosphate in a normal diet, there was no particular effect on the rats during a period of seven days. There were no particular effects in any of these cases on the dimensions or curvature or weight of the teeth in general. That is these deficiencies were experimentally carried from adequacy to less and less and less, until we got a moderate degree of deficiency of a particular element, all of the rest of the diet in vitamines and everything else being normal.

Even then it was found that the teeth were abnormal, not grown to their full normality, from the mineral side, and that the enamel appeared to be affected as well as the dentine.

All of these findings that we ourselves obtained, which have not appeared in the literature since they were buried in the dental cosmos, have not been alluded to by anybody since, although they show practically what has been brought out repeatedly, but here the findings are attributed to lack of ordinary essential mineral ingredients of the food.

A diet that contains too much meat, sugar, potato and very little vegetable matter may be deficient in calcium. A diet for a child that has in it perhaps a little milk, a little cereal and very little meat and a great deal of bread may be deficient in phosphate. Where any one of these elements is deficient to only a slight degree, it appears to have a marked effect in diminishing the quality and the character of the teeth. and I have alluded to these few experimental observations to make the broad statement which seems to be more definitely established in terms of specific finding.

I myself believe that the ascription of nearly all these recent abnormalities to the lack of vitamines is overdone, but whether we agree or disagree on that point, the element of deficiency is plainly shown in all of these various experiments and the findings are the same, deficiency to some degree from the most extreme, as in some of Dr. Howe's cases, to those in our own where the deficiency was relatively slight and shown not in fixity of the tooth but in composition, just at the point perhaps where the deficiency, from being a refined one, so called, was about to become a gross one.

Now there are several current theories regarding the protection of the enamel against decay. It would carry us very far away from our immediate subject to go into these many theories, but one that relates to our appreciation of the significance of diet is that conception which would ascribe the preservative power of the saliva in terms of its calcium content, and the power of that calcium at all times to go into the enamel and replace calcium subtracted from it by acidic influence.

You are probably aware that fermentation in the mouth causes subtraction of calcium from the enamel, and that it does so by converting insoluble calcium phosphate in part to less insoluble residue so that for every three atoms of calcium one may be taken out, but this same theory applies, that if calcium in the form of calcium bicarbonate or calcium phosphate is returned to the surface of the teeth thus affected often enough in sufficient proportion, the calcium subtracted will go back again, particularly if the saliva is alkaline. This may seem to some histologists a rather far-fetched and impossible view.

Dr. Head, of Philadelphia, who has performed experiments in various relations, was one of the first to call attention to this possibility, and he did so in this way, that if a tooth is surrounded by some organic acid such as fruit acid for a short period of time, until it is rendered slightly white (chalky white decalcification), and then is returned to saliva for a sufficient time, the chalky whiteness indicative of the subtraction of calcium will be removed and the teeth will look like normal teeth.

We ourselves have made observations of that kind and found (whatever the explanation may be) that when a tooth is thus affected and calcium is in part removed, and when the chalky white effect is induced, the condition mentioned disappears and apparently something goes back into the tooth to render it normal.

Dr. Head used a machine with a very sharp needle. He ground the tooth to a solid base, placed it on a solid pedestal, put it under the needle, fixed the needle so that it was in sharp contact, and with a micrometer scale arrangement recorded the position on the dial, and then put a heavy weight or force on it and drove the needle as far as it would go into the tooth. He found it would go farther after it had been treated with acid than it would under normal conditions.

I am not suggesting that these findings have taken on the full force of a scientific demonstration, but it does seem that observations already made justify the belief that there is a possibility of this kind. It is true also that other observations accord with it.

During the early growing period the teeth are apt to be formed under conditions that involve some deficiency of calcium. The saliva also may have, and does have frequently, a very low content of calcium, despite the abundance of food that the adolescent or young man or boy or girl may be taking.

Later, however, when the building operations in the body have come to an end and when the amount of calcium taken into the body day by day is practically the same, there is no longer so great a need for calcium elsewhere that it cannot be used in certain other places where there has been deficiency, and it is suggested that the pathological calcifications of old age are partly dependent on this reserve supply and the failure of its utilization in some of the directions it has previously gone. This, too, may seem to be fanciful rather than demonstrable.

But with reference to the saliva, it is a fact that the amount of calcium in it, all other things being equal, tends partly to increase with age.

Now, it was Pickerell who, judging from the character of the enamel, noted that the teeth do harden with increasing age of the individual under ordinary circumstances. There has been considerable discussion of this possibility. Does the enamel actually get harder? Is Pickerell's conception a sound one?

Prior to Pickerell's time it was argued that there were no material differences, but dentists themselves do find very striking differences in the enamel on different teeth and on sections of the same tooth in different individuals and on the same tooth in the same individual at different times.

Whether this is soundly based or not (I am simply reviewing the general opinions that have been stated), I do not know, but if these beliefs or observations are scientifically based, then it is objected that the amount of calcium in the diet must have a material influence in this relation, and if we knew how to cut down the diet without making it inadequate in other respects (when we are able to reduce its calcium), possibly certain concretions and excesses of calcium might be prevented just as in the early growing period, if we knew satisfactory methods of selection of normal food that would give more calcium, and we might appreciably improve the character of the teeth in that respect.

The observations thus far made with reference to the influence of diet all point to the probability that in many individual instances the addition of calcium and phosphate, or both, to the diet of children would very materially improve the normality of their teeth.

Let me cite the fact in another relation that bears on this particular statement. Some years ago, when we felt it was desirable to try to determine whether or not specific internal secretions had any effect on the production of the teeth, a natural question among others arose: Is it possible for anything to pass from the blood into the enamel of a tooth? If it is not possible for a substance to pass from the blood or the lymph into the enamel, it might be unreasonable to expect certain internal secretions to have an effect on the enamel directly. They might do it by way of the nervous system or on cellular influences, but not directly, and so we tried this experiment: what would be the effect on the teeth of animals into which some of the vital stains would be induced, a dye-like trypan-blue, for example, well known to be distributed all over the body except the nervous system, and even into the nervous system in the connective tissue parts? This dye is relatively non-poisonous, and one per cent. solutions of it may be readily injected without causing any serious consequences. Injections can be repeated often, and if injected directly into the blood or, better still, under the skin into the abdomen, when it can be taken without injuring any other part, then the color, which is a very deep blue, is absorbed and circulated freely. Will it pass under such conditions into the teeth, and if so, into which parts?

We found in many experiments, all of them agreeing, without a single exception, that the coloring matter did not pass into the enamel that had already been produced, no matter whether it was under the gums or not. If it had been actually made, the coloring matter did not enter it, but all enamel that was being made at the time the coloring matter was circulating was affected by the circulating pigment.

We tried this from many points of view, in a wide range, from the very last phase of the production of the teeth to the very beginning of forming enamel, and found that all enamel being produced absorbs into it this coloring matter when the coloring matter is in the circulation.

When the tooth is erupted, when it is fully formed after it has assumed its normal, fully erupted position, then injection of the color does not involve any passage to any degree of the coloring matter into any part of the enamel.

This applies, of course, to animals in which the teeth finally made remain so.

Now, it is found that in animals of the rodent type like the rabbit, the guinea pig and the rat, specific instances in which we made the injections, when the injection of the coloring matter was made, while the portion of the tooth that protruded above the gum was not affected in any way, part of the persistently growing incisor that was being made while the coloring matter was circulated was colored deep blue in the enamel, and after practically all the coloring matter had disappeared from the circulation the enamel that followed was unaffected.

It was easy in this way to inject trypan-red and then to have a zone of no influence, all the red coloring matter being eliminated, and to get modified red, white and blue alternations, and it was easy to produce these colors on any layer in any width on these teeth in the enamel. The dentine in all cases was likewise colored. The pulp is always heavily colored. The coloring matter goes through the pulp into the dentine to a considerable distance, through the periodontal bone and tissue into the cementum, but the enamel seems to be impervious to it once it has been produced. This suggests, of course, that enamel cannot be very readily modified by diet or by any other procedure after it is once produced, even before it is erupted, and that the especially important time to consider the effect of diet on dentition is during the period when the protective enamel is being produced and when the body of the tooth itself is being made. Possibly, if we were able to entirely control the diet during that period, the teeth would be perfectly normal in at least the average run of cases.

So it is correct, from the few experiments and the results available, to say that the enamel does not seem to be even materially affected by substances circulating in the blood at any time except when the enamel is being made.

At the same time, there are the contrary views, that the enamel may be made harder, may be modified when it is erupted, by substances entering from the saliva, just as we know pathologically they may be made softer and dissolved away by substances that act upon them from the outside after it has been produced.

The question of tartar formation is important, for it is natural to believe that there is a relation between the diet and tartar formation. All other things being equal, the tartar consists of calcium phosphate and calcium carbonate. These products seem to be thrown down in the mouth on the teeth by the simple discharge from the saliva of carbon-dioxide. The calcium carbonate present in the saliva is primarily calcium bicarbonate. When calcium bicarbonate loses a molecule of carbo-dioxide and two molecules of water, normally insoluble calcium carbonate results.

When sodium bicarbonate acts on calcium hydrogen phosphate, there may be a modification into insoluble calcium phosphate. So that, since the bicarbonate may itself be produced by carbon-dioxide and since the reaction may be modified by the discharge of carbon-dioxide, calcium carbonate and calcium phosphate may be precipitated by the simple elimination of the carbon-dioxide.

But now if the calcium supply in the saliva is deficient, it is obvious that the calcium precipitate might not be produced; on the other hand, the diet is abundant in calcium salts. Their elimination through the salivary glands may be greater than usual, and, of course, calcium salts would tend to be precipitated.

So that those who are dealing with pyorrhea and the perplexities of calcareous deposits produced on the teeth are inclined to believe—at least some of them—that a control of the diet that would eliminate any excesses of this material would of itself be a useful procedure; and if it could be done without depriving the body of what it needs, the expedient might be applied to the selection of food that would help in this particular relation.

This also lacks the definiteness of experimental observation that is necessary to state a finding or an opinion as something more than a mere hypothesis.

Now, going to the other side of the subject, and this part very briefly, what is the possible effect of the secretions from the so-called ductless glands on the dentition? Do we have any definite knowledge of influences in this relation? In a general way it is known, of course, that the internal secretions and the influences of the ductless glands are highly complicated, and that these influences are varied in complications of compensation and readjustment that make it often very difficult, whether we add to the number, whether we subtract from the number or whether we modify any one of them, to be sure that we are getting a clear picture of the influences.

But one outstanding influence might be cited (or perhaps several of them) which seem to be fairly clear, at least in relationship, if not in extent—the so-called parathyroid gland is situated, as you know, in the thyroid gland. In the case of animals like the rat, the parathyroid is exceedingly minute in size, as is the thyroid itself, and often very difficult to locate. There are certain accessory forms of its structure, and out of the way placements of it, so that even when one thinks he has removed all of the parathyroid tissue, he may not have succeeded in doing so.

Efforts to remove the parathyroid by several investigators by the method of applying cautery and burning the gland out have brought these effects to the front as apparently fairly definitely established, that after the removal of the parathyroid gland, and if the animal thus treated survives the serious consequences of the removal, or, putting it in another way, if enough of the tissue remains to keep the animal alive, since the impairment of its function is very serious, then during the after-period when the life of the animal continues, however abnormal it may be, the teeth undergo important changes in the direction of immediate decalcification.

If parathyroid tissue is transplanted from another animal into animals so treated, and if the transplanted tissue grows —that does not necessarily follow—and transplantation is successful, then normal calcification in those teeth is effected from time on, or shortly after, showing that by subtraction of the gland from the body structure there is impairment of calcification.

If this function is returned, the structure results in recalcification, or, rather, return to the normal calcification, as shown in the subsequent development of the growing tissue.

Of course, experimentations of that sort, while interesting in a general way, can hardly be practical unless we interpret them, and unless it becomes information that throws light in other directions, or becomes a controllable situation.

It is a fact that there are abnormalities of the parathyroid gland in people which appear to be of the kind that have effects on the development of the teeth. Certain surgical interventions may involve the parathyroid unfavorably, and possibly affect the teeth. It is not certain, however, that this influence is as clear as the general inference might warrant, for it is possible that the removal of the parathyroid induces a new complex, a new resultant, that now affects the calcification of the teeth. Remove it and there is a new adjustment; restore it and there is a return to the old.

One of the observations made when these findings were first reported by Erdheim was the fact that calcium seems to be increased in excretion from the body after the elimination of the parathyroid, that certain symptoms convulsive in character are the result among other things, and that the introduction of calcium alleviates the symptoms and may restore the animal to normality for the purposes of after-treatment.

But we know that calcium has certain effects on the nervous system, and it has not been demonstrated that the introduction of calcium does anything more than perhaps make the nervous system less sensitive to the results of something else.

Recent investigations have suggested that the chemical substance methyl-granitine is involved in this relation. The parathyroid controls its metabolism, and the farther we go with it, the less obvious the relation between the gland and the condition of the teeth becomes.

So that while the calcification in rodents having persistent teeth has been demonstrated after the parathyroid has been removed, it has not been shown conclusively that in the case of that particular gland the same results follow in the human individual.

We also know that interference with the function of the pituitary gland, the so-called anterior portion, particularly, may result in abnormal teeth development in dogs, for instance, so that they may even retain their milk teeth, failing to produce normally the second set of teeth.

We know that activity in that part may in turn cause active growth in various parts of the body by extension of normal parts into large parts. It is evident that the glands of internal secretion have a profound effect on calcification, on mineralization.

Certain observations made of individuals suffering from dwarfism due to abnormality of the thyroid show anomalies in the teeth that are evidently connected with the failure on the part of the processes of mineralization.

That there is a controllable relation, that there is a general relation between the gland of internal secretion and dentition, would seem to be obvious, but that there is a controllable relation between them is not obvious. By that I mean we have not learned enough to be able to say that, given an instance of abnormal dentition, we can effectively determine that it is due to a controllable deficiency or sufficiency of any one of the internal glands, unless in some isolated cases there is perhaps a reasonable hope that such control might be obtained if it were possible in individual cases.

On the size of diet, however, we do have plenty of evidence, not only that diet affects the growth and the character of the teeth but also that control of the diet in order to prevent anomalies of the teeth and also to make the teeth more normal, is necessary.

In short, it would seem that if, with our present knowledge of diet, all other things being equal, the individual takes a diet that is adequate in terms of what is now understood to be meant by that term, adequate in the amount and kind of the usual essential ingredients, such as protein and carbohydrate and fat selected from such sources of food as involve relatively slight, immaterial modifications from the natural state, including those types of vegetable matter which present vitamines of the several kinds in addition to those in the animal parts, and if, in addition, the diet presents the amount of energy calculated by the number of calories it would yield, so that the heat energy the diet must supply is available, and if that food is of the kind that presents a fairly wide range of natural collection so that it does not become one-sided by preference or accident, then it is very difficult to see why the teeth, so far as the diet is concerned, should not be entirely normal, unless the diet, when all is said for it, is not sufficiently digested and assimilated because of some other inadequacy in the person which makes even a good diet a failure from one point of view or another.

I desire to thank you very much indeed for your patience in listening to a rather labored effort to make a voice that is almost gone as distinct as possible. (Applause.)

DISCUSSION.

Professor McKenzie: I will call on Professor Hunter to lead the discussion.

Professor Hunter: Mr. Chairman, Dr. Gies, Ladies and Gentlemen: It is commonplace that human activities are very largely directed by what we call fashion. That is true not only in literature and in art and in every craft that affects our daily lives, but it is true also in the realm of science.

Every great scientific discovery is followed at once by a flood of complications, and perhaps that is more conspicuously true in medicine than in any other sphere. It comes about, unfortunately, in medicine, that the scientific ideas which the profession is always eager to seize upon are applied not always wisely, not always with caution, and very often by those who have very little scientific aptitude and very little scientific training.

Fashion in medicine, therefore, very often degenerates into fad. That has been the fate to some extent of the recent discoveries to which Dr. Gies in his able address has made allusion; I mean the discoveries in relation to the importance of the ductless glands and their so-called internal secretions, on the one hand, and to the epoch-making discoveries still more recent as to the importance of certain accessories in the diet, on the other.

Under these circumstances, it is a great gratification to have the correct viewpoint in relation to such matters placed before us by an authority like Dr. Gies, and I am sure we must all feel grateful for the trouble he has taken to add to our knowledge of this subject this evening.

Now, I do not know for what reason I should be particularly called upon to discuss Dr. Gies' address. I know nothing about dentistry; I know hardly anything about the recent work on the internal secretions, and not very much about work on vitamines.

Perhaps I know more about recent progress in regard to the so-called vitamines than about the other topics, and I think it is exceedingly timely that Dr. Gies should point out the possible over-emphasis that is being placed upon these unquestionably important substances, whatever they are, at the present time.

As I say, it has become a fad, almost, to attribute to vitamine deficiency practically any otherwise unexplainable malady.

The point which Dr. Gies made, that before assigning or ascribing to a vitamine deficiency such a condition as defective teeth, is obviously of the utmost importance, and if it is absolutely essential to make sure that the ingredients of which teeth are composed are not themselves deficient in amount.

Dr. Gies referred specially to experiments upon the possible effects of a defective supply of calcium, and to the experiments of Sherman. I think it is worth noting in that connection that Sherman not only made experiments with animals, but also made very careful studies of the actual diets consumed by families in moderate circumstances in the State of New York, and as a consequence came to this conclusion among others, that the item in diet which was most likely to be deficient in the food consumed by the average family was calcium.

That seems to me, in the light of what Dr. Gies has told us, a very important observation to have been recorded.

It seems to me one does not and cannot diminish the real importance of the accessories of vitamines. They are important, as was strikingly illustrated during the recent war. I refer to the unfortunate disaster that overtook the British troops at Kut-el-Amara. It so happened that the conditions during the siege of Kut presented a very striking experiment upon the effect of dietary deficiencies. The troops there were partly British and partly Indian. The British troops received as their bread ration white bread, the kind of bread they preferred, and preserved meat and horse flesh. The Indian troops received bread made of whole wheat and other whole cereals, only partly milled, and consisting beyond that chiefly of various kinds of pultaceous foods.

The British troops very early in the siege suffered a serious outbreak of the disease well known to be a deficiency disease—"beri-beri." That is a disease caused by a deficiency in the so-called water soluble vitamine. The diet which they received was deficient in that particular accessory.

The Indian troops did not suffer from beri-beri, the reason being that in the whole wheat of which their bread was made this particular vitamine is abundant; the white bread of the British troops did not contain it.

On the other hand, the Indian troops suffered from scurvy and they were decimated by this disease. The British troops were preserved from scurvy by the meat which they consumed; meat is not particularly rich in the so-called anti-scorbutic vitamine, but the quantities which the British troops consumed were sufficient to supply them with enough of that particular ingredient.

The Indian troops were preserved from beri-beri by their whole wheat, but suffered from scurvy because they had no fresh vegetables.

Now, as a matter of actual fact, the disastrous outcome of the campaign was largely due to those two diseases. Further, the British troops, as the siege continued, exhausted their supply of white bread and had to consume in its place the whole wheat bread served to the Indian troops. From that date (the date is given very precisely in the records of the siege) beri-beri disappeared from the British troops.

I think that is the most striking illustration in recent times of the high importance of these accessory components of the diet.

Now, the application of the vitamine doctrine to such a condition as tooth decay has been sufficiently treated by Dr. Gies. He has pointed out that most of the experiments which would seem to indicate the absence of one or other of these factors, either fat soluble or the anti-scorbutic vitamine, or the anti-beri-beri vitamine, to which in turn caries has been attributed, are by no means proven to be correct, that further experiment is necessary, and that above all, in all such experiments, it will be essential to control the mineral constituents of the diet. I would suggest, however, that we do not yet know in what the action of the vitamines consist. It may very well be that such a condition as tooth decay is not due to any simple factor. It might be primarily a defect in calcium, but not necessarily, however, a defective calcium supply, but a defective assimilation of calcium, and it may very well be that the assimilation of calcium is dependent upon a supply of some particular vitamine.

In conclusion, I would suggest that possibly the two views which have been put before us are not, after all, irreconcilable, but that the one is dependent upon the other.

Dr. A. E. Webster: Mr. Chairman, Dr. Gies, ladies and gentlemen: I have listened with a great deal of interest to the address which has been delivered this evening, and also to the discussion thereon, and have wondered all the time how the remarks we have heard apply to the subject of dental caries.

It does not necessarily follow because a tooth is deficient in calcium, that true dental caries takes place. Every dentist has observed the covering completely lost from dentine, and yet no evidence of dental caries.

We have heard a fair discussion of the problem of decalcification, but that does not so far account for dental caries. Where do we find dental caries? It is a disease of childhood and young adult life, a disease of civilization. The older generations of humans do not appear to have had dental caries in the same form that we have it. Something has come about to make dental caries more prevalent now than in times gone by.

If there is a loss or a lack of calcium we expect decalcification to occur, and there are many forms of decalcification without dental caries. Every observer has seen marked cases of decalcification, and even all the teeth just simply fade away. I have seen all the incisors become completely decalcified, the pulp recede, the molars stand up as they did originally, and the patient who once could hold his pipe can smoke no more with comfort. That is not dental caries, but decalcification. Why did not true dental caries, as understood by the descriptions given by Miller, occur in these cases?

We are prone to think that all the bygone theories about dental caries are fantastic, yet to-day are not many of these same theories again commanding our observation? Every observer has noted that during pregnancy, not decalcification, but true dental caries takes place. Why should that be?

With regard to other views, the work of Black was referred to several times this evening, and we were told that teeth, like other structures, become harder as age advances. Those were not the observations of Black. He was not able to prove that teeth are very much harder at one period, or softer at another, nor was he able to determine chemically that there were more calcium salts present at one time than another, and that dental caries did not essentially depend upon the hardness or softness of the teeth.

Those observations were corroborated by Tomes. We have been told that many patients suffering from dental caries might have that condition improved if calcium could be given in large quantities, and also that it is quite impossible to supply calcium directly, yet in these days we hear that it may be possible to supply calcium directly and have it absorbed.

With regard to more modern views on the subject of dental caries, Pickerell tells us that the enamel of the civilized races is not the same kind of enamel as that found in the teeth of the Maoris of New Zealand, for instance, but that primitive enamel is smoother, harder and better calcified.

Sim Wallace believes the question of true dental caries is a matter of diet, that it is essentially a disease due to carbohydrate ingestion, and has made many experiments to prove that. Pickerell, too, has done work along the same line.

Collier has recently observed in certain of the tribes of Africa, some marvellous facts in connection with dental caries. He has noted that although the main food these tribes consume is made up of a jelly-like substance consisting chiefly of carbohydrates, the nature of which would lead us to assume that they would have dental caries, the fact is that they do not have it until they are recruited into the British Army, which is another story.

Eckleman recently presented the theory that dental caries does not begin outside of the teeth at all, but begins from the pulp, and that there is a reduction of calcium. Eckleman is, I understand, a Norwegian. I have not yet seen a translation of his report on the subject, but I have stated the substance of his idea.

How much better are these theories than the ones held years ago? Miller observed the pathology of dental caries, and we were under the impression that all that was necessary was to swish some drug around the mouth and the dental caries would be removed. We know now that that is not true.

Then it has been suggested that white bread is the cause of dental caries and that its elimination may be accomplished by the consumption of brown bread. The matter is not so simple.

Still more recently, dental caries has been attributed to creamery butter, on the ground that it did not contain the vitamines when the cream was not properly cared for, and that the teeth would never decay if dairy butter, such as we used to get when the cream was not allowed to go stale, could be substituted!

All these theories appear to be very fantastic, and they are wholly inadequate to explain the problem of dental caries. I am afraid that we do not know one thing about it. (applause.)

Professor McKenzie: Those of Dr. Webster's hearers who are students of dental science must now be convinced that they are entering a realm in which they may expect to spend their lives trying to find out something new—or true!

Professor McLeod: Mr. Chairman, Dr. Gies, ladies and gentlemen: I listened with a great deal of interest to the address which has been delivered here this evening, and was glad to note that Dr. Gies gave a very faithful account of the present status of the ductless glands. I know of no problem in the realm of dental science that has excited so much controversy as the causation of dental caries, and I think we are greatly privileged in hearing the subject of oral prophylaxis discussed by an authority like Dr. Gies.

Reply

Dr. Gies: Mr. Chairman, ladies and gentlemen: I have listened with great pleasure and profit to what Dean Webster said. I was especially entertained by the interesting diversion in his mind, that I was discussing the theories and ideas of the origin and development of dental caries. I believe I stated at the outset that the subject having been selected as it was: Diet in Relation to Dentition, and Internal Secretions in Relation to Dentition, I would simply select various illustrations that would relate to the causation of dental caries, but that meant only so far as the possibilities in that particular restriction would permit.

When, at a certain time, I arrived at the statement that it would be impossible to allude to the many theories of the causation of dental caries, I stated I referred to one of the theories, and suggested before I got through that I personally did not believe that particular conception did materially apply, but wished to present it because it related to the general subject, so that there was no attempt to go into the question of dental caries beyond the logical possibilities of the general subject itself.

I did mean to imply that the more normally developed a tooth is, the less prone it will be to decay, and the more abnormal it is in its structure, in the light of well-known theories, presumptively the greater the danger of decay, and the first illustration I presented to you drew attention to the fact that Dr. Howe mentions that in one of his guinea pigs he found that the diet seemed to be actively related by its deficiency to the incidence of dental caries in that particular tooth.

Now, when Dean Webster suggests that the enamel may disappear from a tooth and decay may not appear under it, he is, of course, alluding to exceptions. Dental caries would not be in any circumstances indifferent to the removal of the enamel of the tooth, because some teeth when they lose their enamel do not decay; nor was it intended by all that was said to convey the idea that normal enamel is abnormal enamel, and we have no reason to believe that abnormal enamel is better than normal enamel, but we have reason to believe that abnormal enamel will decay more readily than normal enamel.

It is one of the accepted theories that decay does begin at points of deficient structure in enamel; that may occur very early in life, where the enamel itself is deficient.

As for the giving calcium salts, I am sure that is a perfectly simple matter.

Let me add that for fifteen years we have been putting into the diet of the dogs in our laboratory for animal experiment, year in and year out, one gram of tri-basic calcium phosphate per kilo of animal. One may add suitable calcium salts, that permit of some addition of calcium phosphate to the blood supply without irritating the intestines or causing indigestion and induce a variety of good influences, such as regularity of evacuation of the bowels. It is perfectly logical and simple to add tri-basic phosphate to milk and give it to a child suffering from deficiency of phosphate, just as one would give it any other kind of medicine.

PROFESSOR MCKENZIE: I will ask Dr. McDonagh to move a vote of thanks to Dr. Gies for his interesting lecture this evening.

DR. MCDONAGH: Dr. Gies, ladies and gentlemen: Your Chairman has accorded me the privilege of moving a vote of thanks to the essayist of the evening, and before so doing, I desire to thank the Chairman for his opening remarks in regard to the work of the Canadian Prophylactic Association. I didn't know he knew so much about it.

In view of the fact that Dr. Gies is suffering from an attack of tonsilitis, and that prior to appearing before you this evening, he addressed two other bodies of dental students, I think he is deserving of our highest admiration and deepest sympathy.

As some of you are no doubt aware, Dr. Gies is connected with the "Journal of Dental Science," which is admittedly the most informative organ in the dental world. Dr. Gies has given a great deal of his time to the interests of this journal, a great deal of his time to research work, as much of his time as he could, to the dental students and practitioners of the city of Toronto, and all of his time to the great cause of humanity.

I have very much pleasure indeed in moving a vote of thanks to the great scientist who has addressed us this evening. (Applause.)

Professor Fitzgerald: Mr. Chairman, I am sure we are all deeply indebted to the Canadian Oral Prophylactic Association for having made it possible for us to hear Dr. Gies' address this evening.

I have very much pleasure in seconding the vote of thanks which has been moved by Dr. McDonagh.

Professor McKenzie: Ladies and gentlemen, it has been moved by Dr. McDonagh, seconded by Professor Fitzgerald, that a vote of thanks be extended to Dr. Gies for his address this evening. (Carried by acclamation.)

Dr. Gies: Mr. Chairman, ladies and gentlemen, I am sure no one could receive a vote of thanks expressed in such amiably extravagant terms without feeling complimented, and I thank you very heartily.

Dental Societies

REPORT OF DOMINION DENTAL COUNCIL

Dr. Bush: The Dominion Dental Council has been in operation now for some considerable time. The whole of Canada, both the Provinces and the Territories, with the exception of Quebec, now recognizes the Dominion Dental Council, Yukon Territory having a short time ago, on its own volition, passed a law accepting the certificates of the Council.

We have at present something over five hundred certificates. Class C, which became obsolete a year ago last July, has been revived in this way: Class C, provided they fill the requirements of ten years' practice prior to December 31st, 1907, and can say that they have been in absolute ethical practice for the ten years immediately preceding their application, may pass an examination in operative and prosthetic dentistry, written and clinical; materia medica, therapeutics and anaesthetics. That is a lesser examination than Class D, which requires five years of regular ethical practice. Now, both these sections require the examination; the subjects are the same as those submitted to Class A. So that anyone who wishes to see what the examination in Class C or Class D may be has only to apply for a copy of the examination papers submitted to any of these classes. The questions are of the same character; the clinical examination is the same. Class C is shorter; Classes C and D are both required to go through the same rigid inquiry as to moral character, past history, ethical practice, and so on.

We are now to have two examinations a year instead of one. The man whom we really want to get is the man just out of college; we want to get him registered on the Dominion Dental Council; so for his convenience we have provided for two regular examinations. We have found that the young man coming from college—for many reasons, financial and otherwise—has been unable to take the examination in June, immediately upon the conclusion of the college course. We used to hold a supplemental examination in September; instead of its being a supplemental examination it will now be a regular examination held during the first week in September, the first examination being held in June. Everyone, therefore, will be given a chance to come in for the examination. This year, owing to the fact that this arrangement has just been made, the fall examination will be held, not in September, but on the fifteenth of October, so that any of you who wish to come in in Class D or Class C have yet time to make application for examination on the fifteenth of October. But hereafter this examination will be held the first week in September.

Last year we bought Victory Bonds in the amount of $17,000, bearing interest at five and one-half per cent.; so the Dominion Dental Council now has that amount to its credit. We hope by the end of this year to increase that amount very materially; possibly by $3,000.

Dr. Woodbury: This report is for your information, gentlemen.

INSTALLATION OF OFFICERS.

Dr. Woodbury: We have the unique pleasure of having as our President-elect a double-headed gentleman—not a swelled head, mind you. Dr. Whittaker is President of the Dominion Dental Council as well as President of the Canadian Dental Association. The members of the Council are specially pleased that this honor has come to Dr. Whittaker. We know his executive ability; we know his genial manner in presiding—you have had some examples of it this year—and I am sure that the business of the Canadian Dental Association will be conducted in a statesmanlike way. I now introduce Dr. Whittaker and ask him to take the Chair, receive the remainder of the reports, and close the Convention.

The President-elect, Dr. Whittaker, took the Chair. escorted thereto by the retiring President, Dr. Woodbury, amid applause.

Dr. Whittaker: I never could make a speech, gentlemen; much less can I do so on this occasion. It would be hard for a man to live up to the kind words just spoken by Dr. Woodbury. However, I feel that my election to the Presidency of this Association is more a tribute to the West than it is to me personally, and I appreciate the honor more on that account. I promise to give you the very best I possibly can. I will make mistakes, I suppose; we all do, but if I do, it will be with honest intent. I will at all times, from now until the end of the Convention two years hence, give you the very best that is in me; I cannot do more. I thank you. (Applause).

Dr. Bradley took his place at the platform as First Vice-President.

Dr. Woodbury: Is Dr. Jones here—our new Second Vice-President?

Dr. Bush: Dr. Jones left last night.

Dr. Woodbury: We will send him his honors. I wish, if I may, to thank the Association for the courtesy that all its members have extended to me during my term of office, and to thank the Executive Committee for their continued co-operation and support. No one ever had more loyal friends and colleagues to work with than I have had, and any measure of success that has come to the Convention and to the Association in general has been due not to my efforts, but to those of the men around me. With regard to the Convention itself, this is especially true of the Secretary, Dr. Bradley, and of the Local Committee in Ottawa. We have been splendidly entertained; every possible thing has been done for our enjoyment and to facilitate the transaction of business. We shall leave Ottawa with regret. We would like to live here; but as we cannot do that, we shall take with us the very pleasantest of memories. We hope that in ten or a dozen years our mistakes and our visits to Hull will have been forgotten and that we shall be invited to come here again.

Dr. Abbott: I take great pleasure in moving a vote of thanks to the Local Committee, especially to Dr. Bradley, the Secretary of last year, whose efforts to meet our convenience and promote our enjoyment and make the Convention a success are worthy of special mention. The Local Committee have made every effort to entertain us and give us a good time —it is not their fault that we did not have Hull in the backyard where it would be more readily available to us. (Laughter).

Dr. Bush: I have much pleasure in seconding the motion. I think the Local Committee have done wonderfully; I can only repeat the words of Dr. Abbott and Dr. Woodbury in that regard. Dr. Bradley should come in for a very large share of our appreciation. He has served two terms as Secretary of the Canadian Dental Association, and as far as I know, his duties have been more arduous than those of the secretary of any other like association.

The motion was carried with applause.

Dr. Bradley: Gentlemen, I appreciate all the kind remarks that have been said about me, but I just want to speak of our local executive, if I may. The local executive have very much enjoyed their work. It was a pleasure to have the Canadian Dental Association meet in Ottawa for their 1920 Convention. We thought our last Convention would be held in this city, but it was finally switched to Chicago. I repeat that we have enjoyed our work very much, and every man has done his part. While we realize that there are things we might do better if we were having another convention in a month or so, I am sure every member of the local executive did all he could. We do appreciate your kind remarks.

REPORT OF COMMITTEE ON REPORTS.

Dr. Magee presented the report of the Committee on Reports, as follows:

The Committee on Reports beg leave to report as follows:

President's Address.

1. That the work now being done by the Canadian Oral Prophylactic Association and the Research Foundation, inasmuch as the nature of this work is so similar, be coordinated and these activities conducted by both bodies in such manner as may be decided upon by those qualified to deal with these matters.
2. That the question of dental education be referred to the Committee of the body appointed to deal with such matters.
3. That the question of dental legislation be referred to the Committee on Dental Legislation with a view to bringing about a unification of the laws of the various provinces, thus promoting harmony and closer working relationships among the several provinces of the Dominion.
4. Touching the question of public health, we would suggest that the Committee on Oral Hygiene be asked to make as effective as possible the work entrusted to them, so as to bring as quickly as possible to the public generally the estimable value of the health of the mouth and the terribly evil consequences following a neglect of this matter.
5. We would recommend that the Committee on Arrangements be asked: (a) To exercise great care in the selection of clinicians and to see that such clinicians as well as all advertisements or advertising matter distributed by exhibitors conform to an ethical standard in keeping with the teaching and practices of the Canadian Dental Association . (b) To invite from as many as possible of the members of the Association for the programme of the next meeting touching upon the questions which in the

opinion of those members would be of greatest interest to the general body of the profession.

Dr. McDonagh: One of the first items mentioned in that report is the work of the C.O.P.A. and of the Research Committee; and it is recommended that the work of these organizations be so arranged as to be carried on in harmony.' I am heartily in favor of that. I just want to say one or two things about the work of the C.O.P.A., as I happen to be a member of that Association as well as of the Committee on Dental Research of the University of Toronto.

The work that is being done in the University of Toronto along the line of dental research is not costing the dentists a cent. It is being done with money obtained through the efforts of the Canadian Oral Prophylactic Association; therefore that work should not have the effect of keeping the dentists of this great country from subscribing to the research work of the Canadian Dental Association. It is costing us nothing now, and if we subscribe $100, $200 or $500 to the Research Committee we are doing only what we should do for dental research. If we subscribe it to the Dental Research Committee of the University of Toronto, that is all right; if we subscribe it to Nova Scotia dental research, that is all right. But dental research is such an important thing that it must be carried on by more than one body and in more than one place, and we as dentists can help in more ways than one. If we can help the work of the C.O.P.A. without its costing us anything, that is all right; we have been doing it for years. But we also can put our hands into our pockets and help a research committee without being in a position to say: "Well, the University of Toronto is doing all the research work." Gentlemen, there is no possibility of one institution doing all the research work that is necessary. There is a great field for research in all directions. There is a great field in the experiments that are being carried on by Mellanby, by Macallum, by Percy Howe, by all these investigators in respect to food values, which are of vital interest to every dentist. So that by contributing $100 or $500 to the dental research work of the Canadian Dental Association we are not helping the Association; we are helping ourselves. I have subscribed a little, though not as much as some of you gentlemen have. But I want to make it clear that because we are helping without expense to ourselves the research work of the

University of Toronto is no reason why we should refrain from helping other institutions also.

The report was duly adopted.

The business of the Convention having been concluded, the meeting adjourned.

CITIES AND TOWNS REPRESENTED AT THE ONTARIO MEETING

Alexandria, 1; Arthur, 1; Alliston, 1; Ayr, 1; Belleville, 2; Brampton, 2; Brantford, 11; Brant, 1; Barrie, 4; Brockville, 3; Beaverton, 1; Brussels, 1; Bowmanville, 2; Blythe, 1; Bradford, 1; Bracebridge, 1; Brighton, 1; Collingwood, 1; Caledonia, 2; Carlton Place, 2; Capreol, 1; Chatham, 1; Chesley, 2; Creemore, 1; Cannington, 1; Copper Cliff, 1; Cobalt, 2; Cornwall, 2; Cayuga, 2; Campbellford, 1; Coldwater, 1; Cobourg, 1; Delhi, 1; Dunnville, 1; Dundas, 1; Dresden, 1; Drayton, 1; Dutton, 1; Essex, 1; Exeter, 1; Elora, 1; Eganville, 1; Fergus, 1; Forest, 1; Grand Valley, 1; Grimsby, 3; Gananoque, 3; Galt, 1; Guelph, 2; Goderich, 2; Georgetown, 1; Hamilton, 25; Harriston, 1; Harrisburg, —; Hawesville, 1; Haileybury, 2; Iroquois Falls, 1; Iroquois, 3; Ingersoll, 1; Kenora, 1; Kingston, 6; Kitchener, 5; Kincardine, 1; Kemptville, 1; Lindsay, 2; Lucan, 1; Listowel, 1; Leamington, 1; London, 12; Little Current, —; Mitchell, 2; Millerton, 1; Mimico Beach, 1; Mount Forest, 2; Marmora, 1: Markham, 1; Morrisburg, 1; Meaford, 1; Millbrook, 1; Midland, 1; Markdale, 2; Norwood, 1; Norwich, 1; Newmarket, 3; New Liskeard, 1; North Bay, 2; Napanee, 1; Ottawa, 5; Oshawa, 4; Orillia, 2; Owen Sound, 3; Oakville, 1; Orangeville, 2; Peterborough, 6; Penetang, 1; Port Colborne, 2; Prescott, 2; Port Arthur, 1; Port Hope, 2; Perth, 3; Paisley, 1; Picton, 1; Port Perry, 2; Paris, 2; Petrolea, 1; Preston, 1; Parry Sound, 1; Port Rowan, 1; Ridgetown, 1; Rockland, 1; Rodney, 1; Ripley, 1; Russell, 1; Richmond Hill, 1; Simcoe, 2; Sault Ste. Marie, 1; Stratford, 5; St. Thomas, 4; St. Mary's, 1; Smith's Falls, 2; St. Catharines, 3; Strathroy, 1; Sarnia, 3; Sudbury, 1; Stouffville, 1; Toronto, 175; Trenton, 2; Tweed, 1; Tilbury, 1; Tillsonburg, 1; Tottenham, 1; Thornbury, 1; Uxbridge, 1; Vankleek Hill, 1; Walkerville, 1; Winchester, 1; Woodstock, 2; Windsor, 5; Waterloo, 1; Wallaceburg, 1; Waterdown, 1; Wingham, 1; Waterford, 1; Watford, 1; Walkerton, 1.

VICTORIA DENTAL ASSOCIATION

At the annual meeting of the members of the Victoria Dental Society the chair was occupied by the vice-president, Dr. R. E. McKeon.

The Secretary, Dr. W. Russell, reported a membership of thirty-two. During the year eleven regular and four special meetings had been held, he said. Among the papers read for discussion were such subjects as "Block Anaesthesia," "Devitalization and Extirpation of Pulps," "Efficiency," and a report on the National Association meeting at Boston last summer. Two study clubs have been formed under the aegis of the society, the members taking up special work in pathology and prosthetics.

Special mention was made of the great loss sustained by the society in the recent sudden demise of Dr. Fred Proctor, who for many years had been actively associated in the membership. The treasurer's report was given by Dr. B. Cummings Richards, and Dr. R. E. McKeon reported on the work of the B. C. Dental Council.

The report of the nominating committee resulted in spirited contests for the various offices for the ensuing year, the following being elected: President, Dr. William Russell; vice-president, Dr. R. E. McKeon (re-elected); secretary, Dr. Charles A. Harding; treasurer, Dr. B. Cummings Richards (re-elected); executive committee, Drs. E. W. Hetherington, H. H. Hare and G. C. J. Walker.

Those in attendance at the meeting were Drs. McKeon, Russell, Thomas, Poyntz, Verrinder, Griffiths, Henderson, Hare, Garesche, Hall, Nash, McInnes, Walker, Richards, Balcom, Tanner, Harding and Hetherington.

ONTARIO DENTAL ASSOCIATION

The 4th annual meeting of the Ontario Dental Association was held in the Y.M.C.A., Toronto, May 2, 3, 4, 5, 1921. This was the largest and most enthusiastic meeting of the Association. There were almost 500 in attendance. There were two general sessions, one addressed by Dr. Clapp and the other by Dr. Seccombe. The balance of the time was occupied with demonstrations, clinics and lectures to sections. It was a splendid meeting as a forerunner of the Canadian meeting which will be held in Toronto next year.

Editorial

EDITOR:

A. E. Webster, M.D., D.D.S., L.D.S., Toronto, Canada.

ASSOCIATE EDITORS:

ONTARIO—M. F. Cross, L.D.S., D.D.S., Ottawa. Carl E. Klotz, L.D.S., St. Catharines.

QUEBEC—Eudore Debeau, L.D.S., D.D.S., 396 St. Denis Street, Montreal; Stanley Burns, D.D.S., L.D.S., 750 St. Catherine Street, Montreal; A. W. Thornton, D.D.S., L.D.S., McGill University, Montreal.

ALBERTA—H. F. Whitaker, D.D.S., L.D.S., Edmonton.

NEW BRUNSWICK—Jas. M. Magee, L.D.S., D.D.S., St. John.

NOVA SCOTIA—Frank Woodbury, L.D.S., D.D.S., Halifax.

SASKATCHEWAN—W. D. Cowan, L.D.S., Regina.

PRINCE EDWARD ISLAND—J. S. Bagnall, D.D.S., L.D.S., Charlottetown.

MANITOBA—M. H. Garvin, D.D.S., L.D.S., Winnipeg.

BRITISH COLUMBIA—H. T. Minogue, D.D.S., L.D.S., Vancouver..

VOL. XXXIII. TORONTO, MAY 15, 1921. No. 5.

REPORT OF THE UNIVERSITY COMMISSION OF ONTARIO

Another university commission has reported without reaching anything at all comprehensive in the matter of higher education in the province. It is true the commission which has just reported was asked about university finances only, but in the very nature of things this might well have involved higher education generally. Justice Hodgins only a few years ago spent almost a year in investigating professional education as related to medicine, nursing, social service, dentistry, pharmacy, optometry, and some healing cults. The report covered an exceedingly large field, and contained much information and numerous recommendations. Out of all this nothing has yet come. Higher education in Ontario is not at all uniformly organized.

The Legislature has from time to time given charters to all kinds of schools, colleges, universities, societies and unions to do business. Of recent years some of these have been receiving public moneys. All, or most all, of them are organized in the interests of the group or the public, or both. The Legislature has acknowledged the law, for example, by giving it a charter to govern itself in the matter of education and practice. In other words, the Legislature has delegated its right to govern the law to the Law Society. So it has done with medicine, architecture, dentistry, pharmacy, etc. The presumption is that these groups are organized in the interests of the public. Among those groups where Government money is expended, the Legislature takes more direct control. The Legislature has not yet arrived at the place where it governs all matters which are of public interest. It only acts when money is surrendered. A rather narrow view of Government. The University of Toronto is governed by a board appointed by the Government. Queen's receives Government grants and has no Government representative on its board, while the Western University and the Dental College have Government representatives on their boards.

All education should be in the hands of the people's representatives, and they should appoint a board which should look after the whole group of professional education.

Editorial Notes

The Vancouver *Sun* in a lengthy editorial says advertising and printers ink have made modern dentistry what it is.

⁂

There is a tendency to raise the Matriculation standing to enter dentistry to the B.A. degree. The Province of Quebec has made the B.A. degree compulsory for all candidates less than nineteen years old after 1925.

⁂

The Board of the Province of Quebec claim that not more than one unlicensed dentist can operate a dental office at a time, and he must be under the direct supervision of a licentiate. Many dental companies have sprung up in Quebec which is the cause of action.

⁂

The Dental Study Club of Southern California is an organization composed of practicing dentists in the community, including a large percentage of those connected with dental education at the Dental College of the University of Southern California. Its purpose is to improve the members and of the profession in general in the knowledge and technique in the specialized branches of dentistry.

It has formal quarters in the down-town section, and have stated and informal meetings, besides the regular study class meetings, at which discussions of dental subjects occur. Its equipment consists of four complete dental outfits, besides the work benches for study work, and a stereoptican, surgical paraphernalia and other features for the benefit of the membership.

UNIVERSITY OF MONTREAL—GRADUATES (D.D.S.)
1921

FACULTY OF DENTISTRY.

Mrs. F. Abergson, Miss G. Laporta (Antwerp), Messrs. W. Allard, M. Astrof, L. Bisonnette, D. Boisclair, D. Bordeleau, S. Brill (Paris), G. Chouinard, G. Fauteux, P. Frecynet, G. A. Gobeille, Arm. Hamel, Ernest Hebert, M. Hudon, Rene Imbleau, A. Jolicoeur, J. E. Lamontagne, L. Larochelle, R. Laurence, M. Leibovici (Paris), J. B. Olivier, L. Perron, J. Pregent, O. Pouliot, D. Rousseau, P. E. Thibaudeau, O. Trepanier, J. deMontigny, A. Bourbonnais.

DOMINION DENTAL COUNCIL OF CANADA

PROFESSIONAL EXAMINATION COMMENCING JUNE 14TH, 1921.

TIME-TABLE.

Tuesday, 10 o'clock. . . . Operative Dentistry. (Clinical).
" 2 o'clock. . . . Prosthetic Dentistry and Metallurgy. (Clinical).
Wednesday, 10 o'clock. . Operative Dentistry. (Paper).
" 2 o'clock. . Prosthetic Dentistry. (Paper).
Thursday, 10 o'clock. . . Anaesthetics.
" 2 o'clock. . . Materia Medica and Therapeutics.
Friday, 10 o'clock. . . . . Orthodontia.
" 2 o'clock. . . . . Medicine and Surgery.
Saturday, 10 o'clock. . . Pathology and Bacteriology.
Monday, 10 o'clock. . . . Jurisprudence and Ethics.
" 2 o'clock. . . . Physics and Chemistry.
Tuesday, 10 o'clock. . . . Anatomy.
" 2 o'clock. . . . Physiology and Histology.

ALBERTA DENTAL CONVENTION

The Alberta Dental Association meets this summer in Edmonton on July 20th-23rd. As four of the best men on the continent have been engaged for this meeting, it promises to be one of the best held.

Clinicians and essayists are as follows:

Dr. Webster, Toronto.
Dr. E. Smith, Chicago, "Surgery and Anaesthesia."
Dr. I. L. Furnas, Cleveland, "Full Dentures."
Dr. T. W. Maves, Minneapolis, "Inlays."

These men make an ideal combination, and anyone who can take this in will be gladly welcomed by the Alberta Dental Association, and can be assured of being well repaid for the trip.

Review

Principles and Practices of Operative Dentistry, by John B. Lippincott Company, 20 Unity Building, Montreal.

This well-known book has made a place for itself in literature of dentistry. It has many unusual features. It is sane and conservative in its teaching. It contains more data gathered from experimental work than is usually found in such works. It aims to teach the whole subject of operative dentistry from embryology to exodontia. It aims at a classification of the several departments of the subject covered. The illustrations are numerous and appropriate. The text is clear and the printing and binding good.

New Professional Building.—The property at 24 Bloor street east, Toronto, will be remodelled to serve as a professional building. The location is an ideal one, and the S. S. White Dental Company has prepared a plan for the first floor for the accommodation of dentists. Each suite will be well lighted and have every convenience demanded by the modern practitioner, and plans and full information may be had from D. J. Gibson, Room 631, Bank of Hamilton Building. Main 3382. As there are only a few suites available, an early reservation is desirable. Long-term leases will be arranged. This is also a splendid opportunity for specialists. The building will be completed about mid-summer.

Dominion Dental Journal

VOL. XXXIII TORONTO, JUNE, 15, 1921 No. 6

Original Communications

PRESIDENT'S ADDRESS

J. A. Fleming, D.D.S., L.D.S., Prescott, Ont.

Read before the Ontario Dental Association, May, 1921.

Mr. Vice-President and Gentlemen of the Ontario Dental Association:

The first duty devolving upon me to-day is to thank you for the honor you have conferred upon me in permitting me to preside at this, the 54th annual convention of the Ontario Dental Association. At the same time, I wish to tender my sincere apologies for non-performance of any work which should have been done by your President during the year.

One year ago, in accepting the honor, I stated that I did not like to accept honor without also accepting the responsibility and work which would naturally fall to the incumbent of the position to which I had been elected. Ill health, however, prevented my taking as active an interest in the affairs of your Association as I should have done. I came to Toronto for but one committee meeting, but I found the other members of your executive and programme committees so energetic and enthusiastic that I knew the work of your Association was being well looked after and I wish now to personally thank the members of those committees for the excellent manner in which they have performed their duties.

The programme in your hands to-day speaks for itself and for the work of the committee in charge.

I also wish to publicly express my appreciation and thanks to the Secretary for his work—which is no sinecure indeed—and for his courtesy in forwarding to me after each committee meeting, a copy of the minutes of the business transacted in my absence.

We are met in this 54th annual convention of your Association for the consideration of matters which we hope will be of not only mutual benefit to ourselves but also to the profession in general and to the public with whom we have to deal in our several practices.

J. A. FLEMING, D.D.S., L.D.S., PRESC OTT, ONT.
President Ontario Dental Society.

In the short time allotted to me to-day, I propose to deal very briefly with a few of the items of progress in our profession during recent years and to express my own opinion of how some of these items affect our profession in its work for the public weal. I am aware that my remarks will not meet with the unanimous approval of the members of our profession as I may seem to criticize some pet hobbies of some, but my sole object in so doing is to get men to stop and think whether in each operation they are rendering the greatest possible service to their patients.

If this were a sermon I was delivering, I think my text would be "Service vs. Fad," and I would like you to keep this text in the forefront of your mind in considering the items under discussion.

During my twenty-six years of practice many new methods for the preservation or restoration of teeth have been adopted and become general practice, also many improvements in methods which were already in use. Among these I will mention the gold inlay, silicate cements, crowns and fixed bridges, removable bridges, X-ray, dietetics, education. There have also been many other things new or improved which we cannot here touch upon. Each of these items have been favored with hundreds of pages in our dental literature, and have been the subject of addresses and clinics in practically every dental society on this continent, and I do not propose to attempt to discuss them all in the few minutes at my disposal, but simply to ask, are we not too often carried away by fad and forget service?

When a patient presents herself at your office or mine for professional services, she does so for her benefit and not for ours, and we are not honest with her if for the time being we do not forget ourselves and think only of the best service to the patient, and when having completed the service in the best possible manner for the patient, to direct the patient's thoughts towards the remunerative side of the question.

Gold Inlays.—Gold inlays have been and are a great blessing to the public and also to the dentist in enabling him to preserve the natural tooth for years of usefulness. Has not this great blessing been diverted into the fad zone in too many cases? Has not this method been overdone in some cases under the mask of being easier on the patient and less nerve strain for her than a malleted gold filling, when in reality the dentist has been thinking of his own time and his own exertions and has cut away a lot of good tooth tissue that could otherwise have been saved if not for the saving of his own energy? Is such in the zone of honest service or of fad? The gold inlay is too great a blessing to be abused.

Silicate Cement or Synthetic Porcelain.—This material to-day is filling a large place in the saving of anterior teeth making a neat and inconspicuous filling, but because of its failure to stand up under the strain received in building up corners on teeth it is being condemned by some operators and by reason of its not having given satisfaction in positions where it could not stand the strain of mastication it has got into disfavor with many patients. Again, has not service been sacrificed for fad and a valuable filling material received a certain amount of unjust criticism?

Crowns and Fixed Bridges.—I am making bold to merely touch the fringe of a subject that has two very sensitive sides. Those in favor of crowns and fixed bridges are very sensitive of what they consider over-condemnation. The anti-crown and fixed bridge men on the other hand, are at once rebellious if a word is said in favor of the work, and a supporter of crowns and fixed bridges is almost invariably condemned to oblivion or worse. He is said to be behind the times, he is the cause or causer of all the ills to which the human flesh is heir, all the way from a bald head to an ingrowing toe nail.

Now many crowns and fixed bridges have been giving the wearer twenty to twenty-five years of useful service, and even under X-ray examination reveal no more cause for trouble than an amalgam filling in the approximal surface of a molar. On the other hand, a great host of crowns, both individual and as bridge attachments, have been put on teeth where there was not the slightest semblance of a fit, and these have in most cases been slid on with only the remuneration end in view, and the eyes closed to the gingival end. Such crowns and bridges should be cast into perdition after first being tied firmly to the neck of the operator who perpetrated the deed through greed of dollars. Now, if so many fixed bridges have harmlessly given useful service to their wearers for so many years, are we fair and just in condemning this class of work because so very many have caused trouble? Personally, I think not, but rather that we should improve our technique and also use our best judgment in conscientiously selecting or rejecting the fixed bridge in each individual case. By so doing we will render more honest service.

Removable Bridges.—During the past very few years this type of bridge has come to us in many different forms. The principle of many of them is very good indeed, and some forms of the removable bridge are here to stay, for which we thank God and take courage. Other forms will soon be forgotten for which we will again thank God. The same tendency towards fad and finance to the disregard of service is already making itself felt in this useful restoring of appliance, as befell the fixed bridge. Many of the present-day devotees of the removable bridge were the most ardent devotees and greatest sinners as regards the fixed bridge. Here, again, we would like to ask, "Is not our enthusiasm for removable bridge work

—good and excellent as it is—tending to make us sometimes forget service and driving us to fad?"

X-ray.—One of the greatest helps in the practice of dentistry to-day is the X-ray, and I am very glad that at this meeting of the Ontario Dental Association we are to have its uses demonstrated and explained, and I am sure we shall all profit thereby.

Although one of our greatest helps, it is already possibly the greatest abused fad in dentistry to-day. Everybody reads radiographs, and nearly everybody reads something different from the picture from the reading of everybody else. You must be able to condemn to extraction at least one or more teeth in every mouth, or you really do not know how to read a radiograph.

X-ray machines are even being sold to-day for office decorations for the prestige it will give the possessor, and some of the dealers' representatives even presume to tell us how dollars will pour into the office on installation of X-ray machines. Some have taken the bait and are using the X-ray, one of our greatest blessings, not for service but for fad. Let us try to discourage this fad tendency and render better service. It is the highest thing a dentist has to offer, and honest faithful services seldom go unrewarded.

Dietetics and Education.—These two subjects I think the most important before the dental profession to-day as a means of prevention, and I think they should be dealt with together. There is to-day a greater co-operation than ever before existing between the medical and dental professions, and yet this apparent co-operation is largely superficial. There is not by any means as close a co-operation existing as there should be, and for this neither profession is wholly to blame. There is a certain amount of jealousy existing with the members of each profession which must needs be broken down before the greatest good can be accomplished. The gospel of dietetics as affecting the teeth, especially of the young, must be preached very largely by the medical profession and supported by the dental profession.

Some years ago the subject of physiology was placed on the curriculum of our public schools, and although a very crude physiology was taught, yet a certain amount of good was accomplished thereby. It is my personal opinion that the subject of dietetics, even though it be a crude form, should now be placed on the curriculum of our public schools. By so doing an interest will be aroused in the minds of the children and also in the minds of the parents, and though I believe much good has been done along this line, by dental addresses to teachers' county conventions, much more good would be done by having the subject taught to some extent at least in our schools.

Root Filling and Wholesale Extraction.—It is refreshing to note by a perusal of our dental literature that many who had thrown away their nerve brooches and rushed to purchase forceps, are again beginning to think that perhaps an occasional nerve canal really might possibly be filled, and are again purchasing a few nerve brooches, just a few as yet, but they will get back to larger orders if not crowded. We do not see so much about the 100 per cent. clubs as we did twelve or eighteen months ago. I think there was some disagreement at the meeting of their supreme grand lodge over who was to be chaplain. However, we do not see anything about their having to enlarge their premises, nor that the initiation fee has been raised, showing that there is no particular rush on at the present time to join this great and grand and glorious order of quitters. Because the X-ray revealed to us many of our defects in the filling of root canals, this should be no reason for the throwing up of hands and quitting, but rather that we should put forth greater effort to succeed in that wherein we had sometimes succeeded and wherein we had sometimes failed. Even the radiograph is not always infallible. It is, however, a wonderful help. Many roots were filled to give useful, harmless service for years before we had dental X-ray machines. Many others that were attempted proved to be failures. To-day, with the use of good technique, assisted by the use of the X-ray, the percentage of failures can be wonderfully reduced, and the matter of wholesale extractions reduced to at least a retail basis.

Finance.—To-day we have with us Dr. Clapp, who might justly be termed the Finance Minister of the American Dental Profession. I, therefore, hesitate to say much about finance at this time. I may get in wrong worse than I am. However, I must say something and get it off my system.

I believe that in this country we have not nearly enough really professional dentists to supply the demand, but I just as firmly believe that we have a superabundance of the mercenary type of dentists.

We have often heard dentists pine and whine about lack of recognition of the dentist by the public. Well, whose fault is it? There have been made weighing scales so sensitive that a speck of dust would turn the scales. Let me say that such a pair of scales is not nearly so sensitive as is public opinion, and if any professional gentleman, be he dentist or otherwise, thinks the public does not give him just recognition, let such an one examine himself for the cause within and not with another. Fancy fees will not gain for you high esteem of the public. Neither will fancy office equipment, get and hold for you an enthusiastic, loyal and admiring clientele. The only passport a dentist has to such is honesty, coupled with a sufficient amount of skill, to enable him to render to his patients honest and skillful service which is the only thing a dentist has for sale, and for which the great majority of patients are willing to pay a reasonable fee, which is all an honest man in any profession is entitled to.

DIET IN RELATION TO ORAL HYGIENE.

(Read before Canadian Dental Association, Ottawa, and National Dental Association, Boston, Massachusetts, August, 1920).

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The following copies of lantern slides were shown by the author at the meeting of the National Dental Association in Boston, August, 1920. Comments were made by the author while each slide remained on the screen, and at the conclusion of the presentation, Drs. De Witt Cross and Percy Howe, of Boston, and Thaddeus P. Hyatt, of New York, took part in the discussion.

Slide 1

Preventive Dentistry.

Dental Disease—Most prevalent disease afflicting civilized man—the more civilized the race, the more dental disease.

Preventive Dentistry—A boon to humanity—one ounce of **prevention** better than a pound (16 ounces) of **cure**—advantage sixteen times greater.

Six Reasons for Prevention of Dental Disease:

1st—Lost tooth tissue not restored.
2nd—Substitute materials are inferior.
3rd—Pain and expense are involved.
4th—Serious systematic lesions result.
5th—Infected areas often inacessible, resulting in entire loss of tooth.

Slide 2

LOSS OF TEETH A SERIOUS MENACE.

1. Masticatory efficiency impaired.
2.—Elongation of opposing tooth.
3.—Tipping of teeth either side of space and bodily drifting.
4. Resorption of surrounding tissues.
5.—Prosthetic restorations inferior to nature, from standpoint of utility and esthetics.

Save The Teeth.

The uncertainties and difficulties of dealing with dental focal infection seems to constantly increase—Apical infection is a sequela of dental disease—Therefore **Dentistry's Real Problem is Prevention.**

Practitioners who Render Modern Dental Service concern themselves with the **Cause** as well as the **Cure** of dental disease. They are both **Dental Physician** and **Dental Surgeon.**

Slide 3

The Problem of
IMMUNITY AND SUSCEPTIBILITY.

to dental disease is most complex. Many factors (about which we know compartively little) are concerned, and these usually operate in conjunction. The process of fermentation, simple enough in laboratory, becomes involved with many other influences when carried on in the oral cavity.

Immunity—Normal healthy individuals, living physiologically and possessing dental organs perfect in quality, form and arrangement, are immune to dental disease.

Suspectibility—Every deviation from normal, in either anatomic form or habits of living, predisposes the susceptibility.

Nature's immunizing forces frequently overcome disintegrating factors—in majority of cases; However, under modern methods of living, dental disease occurs.

Slide 4

Factors Influencing
SUSCEPTIBILITY and IMMUNITY

may be divided into two classes:

1.—ANATOMICAL—The inherent qualities of the tooth and its relation to other teeth.

2.—ENVIRONMENTAL—Influences surrounding the tooth and tooth and operating from without.

All factors involved, however, though discussed as separate questions, are intimately related. Each in some way affects the other:—

Anatomy Food	affect	mastication
Mastication—	affects	digestion anatomy saliva oral cleanliness
Food—	affects	digestion
Digestion	affects	saliva
Saliva—	affects	oral cleanliness

Thus we may do and have ,many vicious circles established making the primary cause of Dental Disease difficult to identify.

Slide 5

DENTAL DISEASES.

Periclasia (Path of infection, tissues surrounding tooth).— Howe has shown relation of systematic conditions of Periclasia—tissue alteration primary cause, bacterial invasion secondary—infection preceded by chemical or mechanical tissue disturbance.

Caries (Path of infection, pulp and root canal).—Oissolution of tooth, resulting from acid, by-product of carbohydrate fermentation, retained in contact with tooth. Acid is retained and **protected from dilution in the saliva** by reason of **mucinous film** or **anatomic fault.**

THE MOUTH—Ideal incubator—bacteria always present to cause fermentation or putrefaction when suitable pabulum offers.

In both **Periclasia** and **Caries** important factors involve question of MASTICATION, DIET and DIGESTION.

Slide 6

DIET IN RELATION TO DENTAL DISEASE.

The oral cavity—an integral part of the Digestive Tract—cannot be considered as something apart.

The teeth constantly bathed in saliva, one of the digestive juices, the character and composition of which are constantly influenced by dietetic and digestive considerations.

The increased incidence of Dental disease and diseases of the Digestive Trace has occurred simultaneously, and is doubtless of common origin.

The Digestive Tract has been compared to an etxensive chemical factory, composed of a series of passages and compartments, in each of which the food (acording to its properties) is retained for a time or sent on at once to the next. Each compartment is provided with suitable reagents. The food is finally brought into condition in which it is capable of being absorbed into the body fluids and built up into the tissues.

Slide 7

THE ALIMENTARY CANAL.

is about 30 feet long, of which only three inches (the mouth) are under the control of the will. With the exercise of proper control (both food and mastication) over the voluntary 3 inches, little concern need be given to the involuntary 30 feet.

The Oral Cavity.

Intelligent control of this portal of entry will bring about the operation of nature's forces of resistance. This not only predisposes the mouth health, but to the elimination of most of the diseases of the digestive tract, including stomach, liver, kidneys and intestinal disturbances.

Slide 8
FOOD

Foods are divided into four groups:—

1. Corbohydrate 2. Fats	Energy producing.
3. Protein	Tissue forming Repair waste.
4. Inorganic	Bone forming Neutralize acidity

Fermentation—The carbohydrates (Carbon with Hydrogen and Oxygen in same proportion as inwater), break down by fermentation of acid by-product. Associated in mouth with caries.

Putrefaction.—The proteins (Nitrogenous), break down by putrefaction with alkaline end-product and putrid odor. Associated in mouth with periclasia.

A diet may be right in quantity, but contain too little of one food and too much of another, i.e., "out of balance."

Slide 9

A **Balanced Diet** is one containing sufficient of each of these elements.

Amount of each element required to give balance varies according to age, temperament, mode of living, energy expended, and climate.

For instance:—

Two children in same family partaking same diet, one susceptible to caries,—other immune. Amount of energy expended, makes diet right for one and wrong for other.

There may occur over-ingestion of a balanced diet, or, more unfortunate still, over-ingestion of an unbalanced diet.

Harold Clark has shown that over-ingestion is more frequent where sugar, jams and sweetened deserts are taken freely.

Kirk claims that **over-ingestion of carbohydrate** makes it impossible for blood, muscles, liver, to store sufficient of this element in metabolic form, with resulant overflow and presence of **metabolic carbohydrate in saliva.**

Carbohydrates are necessary to supply body energy, but if over-ingested satisfy hunger without supplying other essential food elements.

Slide 10
FOODS CLASSIFIED.

Most foods contain some of each of the four elements. Foods are classified, however, according to element that predominates.

CARBOHYDRATES	PROTEINS	
Vegetables (ex. Veg. Pro.)	Meat	Eggs
Grains (cereals, rice, flour).	Fish	Cheese
Fruits.	Fowl.	

Sugar (very concent.) Confections, Syrups, Honey, Jams, Marmalades, Cakes, etc.	Peas Beans.	(Vegetable Lentils. Nuts.
		FATS
INORGANIC— Vegetables. Fruits. Greens.	Meat Fat. Nuts Veg. fats.	Cream. Butter
Bran (in whole wheat).		**WATER**

Slide 11

Milk contains elements of each class.

Take some food indicated in each group at each meal. Use sugar or its combinations in great moderation. Use cereals and bread moderately. Use fruits, vegetables, and greens etc. liberally.

Even a sandwich may be so prepared as to contain one food of each class.

For instance:—

Carbohydrate	**Fat**	**Protein**	**Inorganic**
Bread	Butter	Egg or	
		Meat or	Lettuce
		Nuts or	
		Cheese	

Slide 12

Authorities are agreed that in modern life there is a serious over-ingestion of carbohydrate foods, and particularly of sugar.

SUGAR CONSUMPTION

In the United States Sugar Consumption Has Increased 500% in 50 Years.

In the year 1865	18 lbs. consumed per capita
“ “ “ 1875	45 “ “ “ “
“ “ “ 1885	54 “ “ “ “
“ “ “ 1895	62 “ “ “ “
“ “ “ 1905	75 “ “ “ “
“ “ “ 1918	77 “ “ “ “
“ “ “ 1919	93 “ “ “ “

Dominion of Canada Sugar Consumption:

In the year 1919, 95 lbs. consumed per capita.

Contries with lower sugar consumption suffer less from Dental disease. Government statistics indicate that over-ingestion of sugar is most marked in English speaking countries where Dental disease is most prevalent.

Ninety pounds of sugar is an average of four ounces per day. A man working hard in the open air can barely consume (oxidize) that amount.

The sugar is a concentrated food, and used in excess, irritates the digestive organs.

In refining sugar the mineral elements so valuable to the human body are entirely removed. For instance, sugar refined, and as found in beets.

Slide 13

INORGANIC ELEMENT

Quality of tooth not permanently fixed—teeth osmotic—resistance to disease affected by both systemic and local conditions.

Bunting has shown greater susceptibility where calcium content of saliva comparatively low.

Inorganic constituents of body may be increased by diet high in these elements, such as fresh vegetables, skimmed milk and buttermilk.

High calcium content of saliva tends towards maintenance of hard surface of teeth.

Special necessiay for diet high in organic content, during developmental period—diet of mother during pregnancy particularly important.

Slide 14

Case Reported by Department of Preventive Dentistry, Royal College of Dental Surgeons.

Child, 12 months, breast fed, teeth normal at eruption almost denuded of enamel, marked gingivitis, vomit after every feeding daily since birth.

Analysis of mother's milk showed high sugar content and low in protein.

Mother's diet confined entirely to bread, cakes and jam with from 12 to 15 spoonfuls of sugar a day in tea and coffee. Very little protein and no mastication. Similar history 4 previous children.

Normal mothers' milk is certainly best. Bottle feeding preferable, however, in case such as above, providing food scientifically prepared and jaws exercised in feeding.

Slide 15

R. C. D. S. CASE REPORT.

Analysis of Mother's Milk.

Sp. Gravity	1.0308	
Water	87.9	88.
Total Solids	12.1	12.
Total solids	3.35	2.9
Proteins	1.13	3.
Sugar (Lactose)	7.36	5.87
Ash	.26	.16

Unbalanced diet for child, result—Dental Disease.

Slide 16

Disadvantages of those Carbohydrate Foods Resulting in Excess of Acid End-Product in the

Namely, THE CEREALS ,seed products) including bread, cakes and flour products.

Because:

1st.—When mixed with saliva they become particularly sticky and particles have a tendency to cling to the teeth.—(Ailmentary Carbohydrate).

2nd.—Over-ingestion may lead to insidious return to the mouth of carbohydrate elements—(Metabolic Carbohydrate).

3rd.—Modern milling methods eliminate vitamines and important inorganic elements.

Slide 17

ADVANTAGES OF FRUITS, VEGETABLES AND FOODS HIGH IN ORGANIC ELEMENT.

First—Local cleansing action of fruit acids and fibrous vegetables
Second—Aid digestion and peristalsis.
Third—Have basic end-product,—maintain calcification of osseous tissues.
Fourth—Saliva higher in calcium content,—alkalinity increased.
Fifth—Predisposes to maintenance of hard surfaces of teeth.
Sixth—Contain Vitamines.

Tissues,

Slide 18

ACCESSORY FOOD FACTORS.

(Vitamines)

Diets composed of chemically **pure proteins**, carbohydrates, fats, and inorganic elements,—result in disease and death of experimental animals.

In other words, **synthetic milk** does not contain certain vital factors essential to health and growth, and whose presence may be determined only by Biological methods. Analysis may show **natural milk** and **synthetic milk** precisely the same from the standpoint of **chemical composition,** but there is a vital difference.

These essential biological fatcors are known as "Accessory Food Factors" and are popularly called "vitamines."

In modern foods these vital factors are removed or destroyed during the process of manufacture, notably in the case of **white Flour,** and **Gelatine Desserts**. Thus, a meal composed of White Bread ,cake ,sugar, manufactured desserts, tea ,coffee, is entirely lacking in these essential elements.

Slide 19

USE ALL PARTS OF PLANT.

McCollum has shown that "whole grain" is not sufficient, but it is necessary to include **all** parts of the plant in a **balanced diet,** namely,—

Leaf ,Seed, (tubers), Root. Each contains elements lacking in the other, and supplies necessary "bulk of food" less concentrated.

Vitamines are contained in: Meat, Milk, Eggs, Fresh Vegetables, Whole Wheat.

Milk and leaves of plants should never be omitted from the diet. The latter includes Spinach, Celery, Lettuce, Cabbage, Chard.

Slide 20

PLAGUE FORMATION AND MUCUS

Body Lubricant—Assists in formation of bolus of food and deglutition.

Body Protective,—

When irritant or noxious material swallowed, increased flow of mucus occurs. Pavlov reports one hundred times the normal amount of mucus secreted by mucus membrane when surface of stomach irritated by potent reagent. Thus tissue cells are protected and noxious substances are diluted or new combinations formed.

Indigestion (over-ingestion, bolting of food, over-ingestion of sugar, lack of lietetic balance), causes irritation and increased flow of mucus. The mouth is hyper-mucinated, resulting in increased susceptibility to accumulation of debris upon the teeth.

There may be accumulations (unclean mouth) without caries:

(a) Saliva passes through freely and irrigates the surface of the tooth.
(b) Potential alkalinity of saliva (inorganic element) sufficient to neutralize acid by-product (carbohydrate element) in static area.

Slide 21

NORMAL SALIVA.

Free passage of normal saliva over teeth cleanses surfaces and prevents Dental Disease.

When saliva ceases to flow freely, in actual contact with the surfaces of teeth, fermentation occurs providing carbohydrate pabulum be present.

Free flow of saliva prevented by:

(a) Capillary pressure operating in suitable spaces. Capillary spaces may even occur about contact points where lateral movement has worn contact flat. (Colyer).
(b) Mucinous plaque. Salive passes over film without touching surface of tooth.

Importance of Irrigation in Modern Surgery—Salivary Circulation (Irrigation) a Vital Factor in Immunity to Dental Disease.

Slide 22

ANATOMICAL FACTOR.

Many teeth susceptible because of deviation from normal form or arrangement, or defect in enamel surface.

When teeth are anatomic, salivary flow passes over all surfaces, with beneficent result. Anatomical defects prevent free salivary flow over surfaces of the teeth just as effectively as mucinous film. Carbohydrate pabulum, dissolved in saliva (and either of metabolic or alimentary origin), is held in contact with tooth surface by capillary pressure between surfaces of teeth and in deep fissures or pits where the force of capillary pressure operates.

Logmentd of food debris is due to faulty contact, lack of marginal ridges or mal-occlusion. Roughened surfaces, overhanging margins, may be cause. How frequently are fillings left in the mouth, with faulty contact and absence of anatomical form, simply because they cannot be dislodged with an explorer? **Anatomical Restorations Vitally Important.**

Slide 23
MASTICATION.

Household Science teachers, in preparation of table food, sometimes overlook the need of the teeth for adequate exercise.

The food should be of such a form as to require thorough mastication without injury to the teeth—fibrous rather than hard. Thoroughly insalivate all food, particularly startches, as the action of salivary ferment (ptyalin) is first step in the conversion of starches to sugar:

Thorough mastication imperative:—

(a) Development of parts.
(b) Exercise of jaws—proper blood supply to tooth and surrounding tissues. —Increased resistance to infection.
(c) First step in digestion.
(d) Excites abundant flow of saliva.
(e) Cleansing of surfaces of teeth—Cleansing action of mastication.
(f) Thorough mastication is check on over-ingestion.

F. C. Husband recommends as guide to patient,—chew pultaceous foods 20 times; bread 50 times; meat, corn, etc., 100 times. This constitutes

Mouth Efficiency.

Slide 24
GERMICIDES AND ARTIFICIAL CLEANSERS.

Germicides—

—Interference with activity of tissues.
—Drug unknown that destroys micro-organism without injury to tissue cell.
—Presence of germs in mouth normal. Nature builds up immunizing factors in healthy tissue cells.

Prophylaxis—

Hopeless for dental operators and periodontists to confine treatment to removal of local product of disease, and gives no concern to initial cause.

Artificial Cleansers—

More important as a toilet necessity than as prophylactic measure .

Slide 25

SUMMARY OF NATURE'S FORCES PREDISPOSING TO DENTAL HEALTH.

1.—Anatomical—perfect masticatory apparatus—quality of tooth form—and arrangement.
2.—Correct diet—quantity—balance—mastication).
3.—Good health and general immunity.
4.—Normal saliva, nature's mouth wash.
5.—Efficient mastication, nature's dentifrice.
6.—Movement of lips, cheeks and tongue upon mucous membrane and exposed surfaces of the teeth.

Slide 26

CORRECT HABITS OF LIVING

Some immune individuals do not use a tooth brush.

Some susceptible people suffer caries in spite of constant artificial cleansing by most approved methods.

Surely nature has not bungled!

Correct habits of living bring immunity.

Reparative process is necessary, but that is only first step toward real treatment, which is

Preventive Dentistry.

Slide 27

CONCLUSIONS

First.—**Oral Bacteria not Determining Factor** in Dental disease—present in both susceptible and immune cases—normal.

Second.—**Presence of Carbohydrate on Essential Element in Caries.**

Third.—Salipary stasis always present in dental caries.

Fourth.—Fermentation occurs in mouth when flow of saliva over free surface of tooth is interfered with:

(a) Anatomical defect, capillary pressure.
(b) Mucinous debris.

Fifth.—Anatomical consideration vital—**make all Operative and** Prosthetic Dental restorations true to anatomic form.

Sixth.—Indigestion, associated with increase of mucus, predisposing to accumulation of debris.

Seventh.—**Excess of those foods which result in acid end-product** in tissues, **depreciates** inherent **quality of tooth,** thus favoring susceptibility.

Eighth.—Dentists must practice as **Dental Physicions,** as well as **Dental Surgeons.**

Slide 28

SUGGESTIONS FOR CLINICAL OBSERVATION

Caries without Salivary Calculus—Over-ingestion of sugar.

Caries with Salivary Calculus—Over-ingestion of Bread and Flour Products.

Salivary Calculus—Over-ingestion of any Food.

Gingivitis—Over-ingestion, Auto-intoxication, Trauma.

Thickened Saliva Hypermucinated—Indigestion— character of Diet or lack of mastication.

Slide 29

ACKNOWLEDGMENT.

In preparing manuscript in a subject such as this, it is impossible to mention all of the authors to whom one is indebted for suggestions, but the writer desires to express appreciation particularly to the following:—Pavlov, Pickerill, Sim, Wallame, Kirk, Black, Howe, Sherman, Talbot, Bunting, Johnson, Head, Addis, Gies, Colyer, and McCollum.

ANNUAL ADDRESS OF THE PRESIDENT C.O.P.A.

A. J. McDonagh, D.D.S., L.D.S., Toronto

Mr. Chairman and Gentlemen:—Another year has passed, one of the most eventful years in our history. As many of you know, we seem to have started a new phase of activity. For the past fifteen years this association has been devoting itself to the good of the dental profession and of the general public in the Dominion of Canada, the work having been done up till this year entirely by a board of directors. At our last annual meeting we asked you to endorse the appointment of a dental executive to take charge of the work. At that time I promised you that the dental executive we would appoint would be one of the biggest men in the dental profession. I am glad to say that your board of directors succeeded in obtaining that calibre of man in the person of Dr. Harry S. Thomson, and we have been able to make satisfactory arrangements with the Dental Research Committee of the University of Toronto, by which Dr. Thomson is employed, part time by the university and part time by your association. Since Dr. Thomson has taken hold of the work, enterprises which we had dreamed of in the past and tried to accomplish, but could not, on account of physical difficulties, have been brought to fruition, or are on the way. This year has proved that it is necessary, in order that we do big things, to have one competent executive head for our association. I may say we have known this for several years, but did not feel financially strong enough to undertake it. I now feel that even from a financial standpoint, a dental executive is a great acquisition. In one or two transactions the association has been saved much more than the salary apportioned during the time of his incumbency of the office, but there has been a larger gain than that, the research work, which I consider our greatest work, has been stimulated, organized and rendered useful to the profession.

We have been trying for some time to make ourselves and our products known in the United States with greater or less degree of success, but without much benefit to our society. Dr. Thomson has not only fostered the fruits of our energies in that line but has succeeded in getting for us a contract with the Lambert Pharmacal Company, which we fondly hope will be of great benefit to them and us, and will enable us to sell our brushes all through the United States. Furthermore, we expect not only to sell in the United States, but eventually in every other civilized country in the world. You will readily see, if we succeed as we expect to, in the near future we will have ample funds for carrying on and financing a large research department.

In order to do business in the United States and be a success, we have been advised that we should change our name to the International Oral Prophylactic Association, and that question is to come up to-night. I may say that I, after studying the matter, believe it is a wise thing to have an International Oral Prophylactic Association, but I also feel that we should still retain our old name, Canadian Oral Prophylactic Association. If you agree with me in that, we will have two companies instead of one, a local association and an international association, the international association being the business part of the association. The best way to get that condition of things has not been thoroughly threshed out as yet.

As you know, we have been buying brushes, whenever we could get them, from Kent & Sons, of England, Unfortunately, we have not always been able to get Kent's brushes, and in order to supply the demand for the military during the war, we bought a consignment from Japan. Some of that stock is still on our hands, for which I am exceedingly sorry. Mr. Barton Kent was in Toronto last summer, when some of your Board of Directors made it their business to meet and talk with him. He was very much pleased to find the work we were doing, and said he would like to help us on in our research work, therefore would give us 5 per cent. off their best price for brushes on our present order of 500 gross, a concession which we greatly appreciated.

We have been the Educational Committee of The Canadian Dental Association for ten years. A year ago at your annual meeting you suggested that we give up that work, and that was published in your Vice-President's address, I not being present. That suggestion was acted upon this year at Ottawa, and the Canadian Dental Association changed its constitution, appointing an Educational Committee of its own, of five members. This committee will carry on the work which we have been doing along these lines, but your executive will give them any assistance in his power to carry on the work.

We have paid this year to the Dental Research Committee of the University of Toronto, $3,500.00, besides taking care of the other donations and charities, which we have been in the habit of supporting for a number of years.

We have had a great many Executive Committee meetings during the year, necessitated on account of the new enterprise we are embarking on. Besides, there have been special committee meetings of the Board of Directors taking place every week. Dr. Harry S. Thomson has made several trips to the United States, and generally the business end of your association has been very busy. At our exhibit in Ottawa, during the Canadian Dental Association meeting, the dentists seemed to greatly appreciate the Association and its work, and we are hoping to get increased support and co-operation from them. That is the only way in which we can hope to succeed and carry on the good work which we have undertaken.

Our paste during the past year has been improved, so far as flavor and the feeling it gives to the mouth is concerned, but, after making a thorough study of the dentifrice situation, at the present time we are convinced that there is no better material as a dentifrice in the world to-day than Hutax is. Of course, we are always carrying on investigations along that line, and if at any time in the future, your committee decides there is anything better in the world than we have, it will be their duty to change the formula of Hutax to that formula which is better.

Our income and disbursements for the year are fully described in the financial report, and the educational committee will describe to you their activities. I want to thank all of the members of the association for their loyal support during the year, and particularly do I want to thank the members of the Board of Directors, who have never failed on any single occasion to do everything in their power to further the good of the cause. I also want to most sincerely thank our Dental Executive, Dr. Harry S. Thomson, whose ability, tenacity of purpose and honesty are a wonderful inspiration to the others of the Board of Directors.

REPORT OF THE DENTAL EXECUTIVE FOR THE C.O.P.A. FOR YEAR 1920.

HARRY S. THOMSON, D.M.D., Toronto, Ont.

IDEALS IN BUSINESS

Can an organization be a success while built and maintained on ideals? To prove it look carefully into the history of the founding and the progress of the Canadian Oral Prophylactic Association. Men with high professional ideals and a mighty sense of their responsibility to humanity founded it, and with the hope of extending these ideals to the good of all, have produced Hutax Mouth Products, and through the royalties received from the sale of these, they have endeavored and succeeded in carrying on educational and instructional work to the profession and also to the general public that has brought untold good to the people all over Canada. In these days of modern business methods, while high ideals must be maintained, it is necessary to link up with them practical business methods in order to make an organization grow and perform its useful part in the business world.

A Study of the Undertaking

On becoming your dental executive on June 1st, 1920, my first efforts were to bring all the work of our Association under a practical businesslike administration, co-ordinate all the different activities, commercial and educational, under one head. For this purpose, I have spent considerable time going over all the correspondence since organization, old and existing contracts in order to be familiar with all things pertaining to our work, past and present. That this all takes time is proven by the fact that some of the work is still in progress, but things are slowly coming into shape and we hope soon to be working on a practical, modern, businesslike basis.

Requirements of a Dentifrice

One of my first efforts was to find out as nearly as possible, the requirements for a perfect dentifrice according to the latest accepted scientific thought. The great difference in opinion existing during the last three or four years on this subject is, I am glad to say, disappearing, and the newer idea was perhaps best expressed at the National Dental Convention last August in Boston. Much discussion was brought out and the final analysis shows that a dentifrice, to be right, must be bland, free from hard grit, must not contain strong medicinal properties, must not promote strong chemical action in the mouth and must be free from sugars and starch. On the strength of these findings I am convinced that Hutax measures very high up to the ideal standard. We have made some slight changes in it which makes it more abrasive without grit, and have also made a change in the flavor, so I feel that we now have a dentifrice that conforms to the very latest in scientific thought, and is a most pleasing and efficient product.

HUTAX BRUSHES

Our Hutax brushes have always occupied a very high place in the opinions of those who have made a study of the requirements, and their increasing popularity is proving that they are finding their own high place in the opinion of the general public. Our great difficulty has been in maintaining a sufficient supply to satisfy the demands. The European brush market is in an awful state. Not only can we not get quantities, but, with one or two exceptions, we cannot depend on the quality, and the prices are tremendously high. New quotations just received are four times the cost of the same brush in 1915. During the war we were forced to buy from the Japanese market. This condition may exist again, but we shall endeavor to get a brush that will better live up to our requirements than what we have had. John Hargreaves & Son have been our selling agents in Canada for our brushes for some years, and right here I would like to pay tribute to Mr. Hargreaves for his genial personality, his honorable dealings and his high standard of business ethics.

HUTAX PASTE AND POWDER

Our Hutax paste and powder are manufactured and sold by Lyman Bros., and during this year we entered into a new agreement with them, through which we are to receive an additional royalty of 20c per dozen, over and above our royalty from seals. By special arrangement, they very kindly turned into cash some samples that we were to receive by an existing arrangement dating from 1919. This advanced our royalties this year by about $3,000.00.

HUTAX BRUSHES IN THE UNITED STATES

For some time past we have had a considerable demand for our Hutax brushes from dentists in the United States. This has grown each year, until last year we shipped there about 50 gross. This suggested the thought that we should put them on sale over there, and to this end we entered into negotiation with several firms. We were particularly fortunate in getting in touch with Mr. A. R. Deacon, secretary of the Lambert Pharmacal Company, makers of Listerine, and after considerable negotiating, this firm consented to become our agents for all of the United States and its possessions.

We appreciate their high business standing and are glad to have them linked up with us in this great cause of ours. We anticipate a large sale of Hutax brushes in the United States, and look for a greatly increased revenue as a result.

ADVERTISING

The question of advertising our products in the newspapers and magazines has come in for a lot of consideration and will likely be definitely decided during the coming year. The aggressiveness of our competitors has almost forced us to take a definite stand in this matter. The amount of money spent on advertising dentifrices to the public in the past year has been enormous, twenty times more than in any five years preceding. This has tended to bring almost every preparation except our own constantly before the eyes of the public, many of which are in one way or another highly injurious to tooth and gum tissue, so, apart from increasing our sales, an advertising campaign would tend to educate the public in the right and wrong kinds to buy, or the kind at least that will not cause injury. During the past few months we have sent out to every dentist in Canada a series of 8 post cards, telling them what Hutax is and why they should prescribe it.

INFORMATION BUREAU

During the month of August we issued a circular outlining our educational work and announcing a Department of Information in connection with our work. The results from this circular have been astonishing. From coast to coast we have had requests for information covered by that circular from 341 dentists. All of these have been replied to and, as far as possible, the required information provided. This department is capable of great enlargement and wonderful good, as has been proven by the interest taken in it by dentists living in the smaller towns and cities. We hope to issue a further circular on this matter early in the coming year.

Our educational work has increased during the past year. Our moving picture films have been in constant use from coast to coast. In British Columbia and Nova Scotia they have been shown under the direction of the Oral Hygiene Committees of the province. In Ontario they have been shown by the Provincial Board of Health in cities and towns, to large numbers of people, besides being shown to thousands more at the Toronto Exhibition. It is easy to estimate the great good accomplished by this way of showing practical methods of mouth cleanliness and practical results obtained.

PUBLIC LECTURES

We have had a great many copies made of our skeleton lectures. Some of them we provide lantern slides for, and the growing demand for these indicates the fact that dentists are realizing more and more every day the great good they can do by presenting to the public in a direct manner, the latest scientific thought on matters pertaining to their own work. Our school cards and charts also provide a great help and are now pretty well distributed throughout every province of the Dominion. Our pamphlets and literature for the public have been used largely in public health exhibits, child's welfare exhibits, nurses' training classes and hospital clinics. These we have abundantly supplied free.

DENTAL RESEARCH

The Department of Dental Research of the University of Toronto, which is maintained by our Association, has now been in active operation for about two years and we have every confidence in believing that it is going to work a wonderful good for the profession in Canada. We have a staff of scientific workers constantly employed, and what they are doing we will publish from time to time as their work is completed, and only those who have completed any research work know how much time it really takes and what discouragements and setbacks there are to contend with. During 1920 we have carried on work on cements and amalgams, to determine the germicidal properties of cements and their permeability to bacteria, also how they inhibit bacterial growth. This work will take two years to complete, but our progress reports show that our findings are going to be of real value. During this year we have also started research work on diet and its relation to mouth conditions. For this work we are using dogs, and are simply following along the lines of work done by Mallenby, Hees and others, first to prove that we can, through the same cause, produce the same effect and get like results as they. This, then, will lead us into an opportunity to carry the work along further on our own initiative, and we hope to make findings of greater value. During the last few months we have also started work on determining the different types of bacteria existing around the apex of teeth showing an area of infection, also to show the presence of infection in vital pulps and how it gains access thereto, also several other important lines of research on infected teeth. These we hope will provide results that will be of benefit and available to every dentist in Canada.

The co-ordination of the many different branches of scientific research of Toronto University shows what great benefits are to be derived from all for each separate branch, in fact, in some cases it would be impossible for us to carry on our dental work without the assistance of bio-chemistry and medical research, and I wish here to thank the workers in these other departments for the great assistance and encouragement they have given us.

HOPES FOR 1921

And now, during the coming year, 1921, we hope for great things. We hope for a big increase in our revenue from the sale of Hutax products, which will enable us to greatly increase our work in all lines, to assist the different Oral Hygiene committees in every way we can in the different provinces to carry on their work of public health and oral hygiene, to assist in the organization of other research work, and to co-operate with and promote any that are now existing. At the last meeting of the Canadian Dental Association in August, they appointed a Dental Research Committee. I would suggest that we keep closely in touch with that committee, that we may carry on research work on the most needed lines, and let them have any reports and findings that we may have, that they may pass them on to where they will do the greatest good.

FIFTY-FOURTH ANNUAL REPORT ONTARIO DENTAL ASSOCIATION.

The Ontario Dental Association met Monday, May 2, 1921, at 2 p.m., in annual convention with the President, Dr. J. A. Flemming, of Prescott, in the chair.

Dr. J. A. Bothwell, of Stratford, the Honorary President, presided during the President's address of welcome, when he made a few remarks, after which the points in Dr. Flemming's address were discussed by Doctors Harold Clark, Bill Davey, W. B. Amy, and Dr. Nevitt.

The President replied to the discussion, and then read the names of the nominating Committee:

Dr. McComb, Port Arthur; Dr. Abbott, London; Dr. Martin, Ottawa; Dr. A. E. Webster, Toronto; Dr. J. A. Bothwell, Stratford.

It was moved by Dr. Conboy, seconded by Dr. Bothwell, that Drs. Harold Clark and Cecil Trotter be appointed Auditors. Carried.

A motion was made by Dr. Bothwell, of Stratford, that Drs. C. E. Brooks and Gausby be elected to the Board of Governors for three years. As no other names were proposed in nomination, the Secretary was asked to cast the ballot for these men, which was done.

Dr. G. W. Clapp, of New York, then gave an interesting talk on "Accounting."

Tuesday, a.m.—Clinics were given as follows: Conductive Anaesthesia. X-ray Group.

Tuesday, p.m.—The President presiding, the Secretary upon instruction, cast the ballot on the report of the Nominating Committee as follows:

Hon. President, Dr. J. A. Flemming, Prescott; President, Dr. F. P. Moore, Hamilton; Vice-President, Dr. Sprott, Barrie; Secretary-Treasurer, Dr. J. A. Bothwell, Toronto.

ADVISORY COMMITTEE.

Dr. R. G. McLaughlin, Dr. Harold Clark, Dr. Wallace Seccombe, Dr. Ed. Paul, Dr. A. D. A. Mason.

ORAL HYGIENE COMMITTEE.

Dr. H. E. Eaton, Dr. J. P. McLachlan, Dr. F. C. Husband, Dr. F. J. Conboy, Dr. Arthur Ellis.

The report of the C.O.P.A. was given by Dr. Harry Thompson. The adoption of the report was moved by Dr. Abbott and Dr. F. Husband.

Dr. McLaughlin reported on alleged malpractice cases for the Advisory Committee, moving its adoption, which was seconded by Dr. Price of Orangeville.

The Dental Research Foundation report was presented by Dr. R. G. McLean moving its adoption, which was seconded by Dr. McDonagh.

Dr. Horace Eaton presented the report of the Oral Hygiene Committee, moving its adoption, Dr. Ellis seconding same. This report was discussed by Dr. Abbott and Dr. McDonagh, after which Dr. Eaton changed the resolution presented in his report to ask the Association to recommend to the Board of Governors that they make a grant of $1,000 to this Committee. This was seconded by Dr. R. G. McLaughlin. Carried.

Dr. Ellis reported on the finances of the Oral Hygiene Committee, and moved its adoption, seconded by Dr. Trotter.

Dr. Husband gave a short talk in explanation of the pamphlet which was being distributed by the Oral Hygiene Committee.

Dr. Wallace Seccombe's lecture with lantern slides on ''Preventive Dentistry'' was then given in a most interesting and instructive manner.

Tuesday, 8 *p.m.*—Dr. G. W. Clapp held a class at the College in ''Practical Accounting.''

Wednesday, p.m.—Clinics by Hamilton Clinic Club on standardizing technique for constructing various forms of clasps, saddles and gold inlays.

Thursday, a.m.—Anaesthesia clinic. Preventive dentistry clinic.

A pleasant feature of the Convention was the annual ''home-coming'' reception and complimentary buffet supper to the dentists and their wives held at the R.C.D.S. on Monday evening, May 2.

FINAL EXAMINATIONS IN DENTISTRY AND DENTAL NURSING, TORONTO, CAN.

Subjects in parenthesis are conditions.

H. S. Abar, H. Adams, R. B. Adams, R. G. Agnew, S. C. Akins (Clinical, Operative and Prosthetic, Thesis), H. R. Anderson, W. J. Armstrong, C. W. Asselstine, Ida M. Barber, A. F. Barnes, L. V. Barnes, A. J. T. Barton, H. R. Bateman, H. C. Bayne, N. Beattie, R. J. Beckett, J. W. Bell (Exodontia, Physics, Anatomy, Clinical Operative, Prosthetic and Orthodontia), O. H. Bertrand, J. H. Best, A. O. Bradley, R. T. Broadworth, H. S. Bryans (Economics, Clinical Operative, Prosthetic and Orthodontia), J. A. Butler, G. A. Calbeck, A. A. Cameron, E. T. Campbell, E. G. Charavel, W. D. Clark, H. McC. Code, F. M. Corbett, L. M. Coughlin, J. T. Coyne, A. F. Dales, A. P. Daly, B. Davidson, A. O. Derbyshire, R. E. Dinniwell, E. R. Dixon, E. R. Dobbs, L. R. Dodds, N. S. Douglas (Prosthetic Dentistry), J. C. Duff, I. W. Dunbar, C. A. Elliot, E. V. Elliott, W. J. Faulkner, B. D. Foster, J. M. Gabriel, E. Garfat, L. R. Garvey, A. Gott, F. M. Graham, T. L. Granovsky, J. O. Green (ill, to complete credits), C. A. Haines, G. B. Halladay, H. Harper, A. E. Hilliker, H. B. Hoar, G. W. Howson, W. H. Hunter, R. G. Hyde, J. E. Irwin, C. N. James (Exodontia, etc.), G. G. Jewitt, G. Johnston, R. E. Johnston, U. N. Jones, J. A. Kennedy, A. R. Kerr, M. E. Killoran (Preventive Term Credit), J. A. King, M. A. Kinsman, C. H. M. Laidley, N. M. Layton, H. B. Legate, L. A. Letellier, T. D. Lewis, R. J. C. Lumb, M. R. McAllister, F. D. McClure, (Medicine, Prosthetic Dentistry, Pathology, Histology, Term Credit), L. H. McCool, R. C. McCutcheon, A. B. Macdonald (Prosthetic Dentistry, Pathology), H. E. McFeetors, J. C. McGowan, D. D. McIntosh, A. W. Mackay, G. G. McKee, W. F. McLean (Economics), J. M. McLeod, J. C. McLister, J. E. McMullen (Pathology), R. A. McQueen (Medicine, Prosthetic Dentistry, Clinical Orthodontia), E. Marshall, T. R. Marshall, L. M. Martin, G. J. Millen, R. J. Mills, W. Mitchell, H. Moulson, F. O. H. Murta, A. E. Murphy, J. O. Olson, J. M. Partlo (Pathology), G. S. Paul, A. B. Porter, M. L. Pratt, T. A. Provost, W. J. Robb, J. F. Roberts, T. A. Robinson (Clinical Orthodontia—3rd year Technic), R. Rochon, W. J. Rodwell, J. L. Rogers, J. S. Rollitt, C. M. Rowsome, L. N. Ryan (Pathology, Prosthetic Dentistry), W. E. Sheridan, C. C. Smart, G. H. Snell, R. J. Socket, J. A. Spellman (Osteology Term

Credit), C. W. Steele, C. G. Stewart, G. O. Stewart, F. L. Thompson, C. J. Taylor, G. E. Teal, G. A. Thornley, E. R. Upton, G. W. Wagner (3rd year Orthodontia Technic), J. F. Warnica, W. E. Wessels, R. R. Whittaker, J. P. Whyte, W. J. Wilkey, C. B. Wilson, P. R. Wilson, H. L. Windrim, R. G. Woods, J. Zimmerman.

NURSES' EXAMINATIONS.

The results of the recent Dental Nurses' Examinations were considered and the following were passed and were granted their certificates: Marjorie Ethel Adams, Leona Maud Allen, Sophie Geraldine Amyot, Doris M. Arnedt, Ola Elizabeth Bennett, Margaret Isabel Black, Violet Dorothy Davidson, Florine Dumouchelle, Ruby Irene Dynes, Grace Evelyn Goodchild, Ella May Graham, Janet Hamilton, Agnes Muriel Ingram, Reta Luella Lapp, Helen Marjorie Love, Dorothy E. Foff, Edna Mary Sharpe, Jean Martin, Helen Mitchell, Kaye Gertrude Murphy, Norah O'Gorman, Dorothy E. Rose, Edna May Sharpe, Edith Sherwood, L. Thelma Stewart, Christina C. Waddell, Ullah Mary Applestone Wansborough, Athol Marie Wesley, Olive Elizabeth Willis, Annie B. Young and Agnes Helen Rose.

The graduating exercises of the nurses' class were held in the college building on Thursday evening, May 12th. Convocation of the University in dentistry, and the commencement exercises of the college were held in Convocation Hall, on Friday evening, May 13th. Hon. Mr. Justice Riddell, LL.D., addressed the graduating class.

DALHOUSIE UNIVERSITY GRANTS DEGREES.

At the annual convocation of Dalhousie University, May 5, 1921, the following graduates of the Faculty of Dentistry received the degree of Doctor of Dental Surgery:

Bagnall, John Stanley, Prince Edward Island.
Crowe, Victor Densmore, Nova Scotia.
Finigan, Malcolm Daley, Nova Scotia.
Lawley, James Herman, Nova Scotia.
Lent, Frederick Eugene, Nova Scotia.
MacIntosh, George Peter, Nova Scotia.

FRANK WOODBURY, Dean.

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CANADIAN DENTISTRY AND THE ROYAL COLLEGE OF DENTAL SURGEONS

Dentistry is no longer looked upon as a mechanical art only. It is now generally recognized as having much to do with public health as well as personal health and happiness. For centuries it has been known that all parts of the human body are inter-dependent in matters of function and disease. If the teeth are diseased the balance of the body cannot be normal, and if there be disease in any part of the body the teeth cannot be normal. These fundamental principles have been recognized and forgotten many times in the past ages.

When dentistry in America became an independent profession in 1839, having its organization independent from the mother profession, it tended to emphasize the mechanical which was neglected under medical direction, and at the same time forgot for a time some of the basic principles of health and disease.

About twenty years ago a number of dentists in London were able to get the attention of the medical leaders sufficiently to again call attention to the intimate relationship between the condition of the teeth and general health. Then followed a new outlook for dentistry. It became apparent that to meet the new demands dental education must be placed on a much broader and more scientific foundation. When the great war came, dentistry played no small part in keeping the men fit.

These two facts have attracted the attention of the public to such an extent that there is a great increase in demand for dental service in both private and public practice, as well as a marked increase in attendance at the dental colleges.

Dental practice in Canada is a development of many decades, even centuries. When the French first came to Canada, it is believed they brought dentists with them. Not only this, but the French people of Canada have been in close communication with French dentistry, which was the most foremost for many centuries. French dentistry has left its impress on dental practice on this continent. Likewise when English or British settlement began in Canada, it brought with it British methods of practice. The close proximity and the close relationship between the United States and Canada have had a profound effect on Canadian dental practice. Out of these three influences has developed methods of practice and organization, which are distinctly Canadian.

In Canada each province has control of its own dental education, dental laws and practice. Each province has a board or council, which governs dentistry under Legislature Acts. In some provinces Legislatures appoint some of the members of the board or council, but mostly the profession elect their own representatives.

Besides these provincial boards which direct local affairs, there is a Dominion Dental Council, made up of a representation from each provincial board from all the agreeing provinces (all are agreeing provinces except Quebec). The Dominion Council sets two examinations in each year, at which candidates may sit and obtain a certificate acceptable to practice dentistry in any agreeing province in Canada. The standards of these examinations are of necessity as high or higher than any of the provincial examinations set for candidates who wish a license to practice in one province only.

Organized dentistry in Ontario dates back to Confederation; in fact, the Dental Act of Ontario is the oldest in existence. The Dental Act of the Province of Quebec soon followed that of Ontario, and the Act of New York State was the first of the United States.

The Royal College of Dental Surgeons of Ontario is the statutory name given to the organized dental profession of the province by the Legislature. The School of Dentistry is the organization whose duty it is to educate men and women in the profession. It is under the direct control of the Royal College of Dental Surgeons, through the board of directors. The board of directors until 1920 consisted of eight members, elected annually from seven districts in which the province is divided, and one elected from the faculty of the School of Dentistry, when the Dental Act was so changed as to make the Minister of Education *ex-officio* a member of the board of directors. Thus the board is made up of nine members, one representing the faculty of the School of Dentistry, one representing the Ontario Government board, and seven representing the dental profession.

All the property or assets of any kind are held in trust by the board for the people of the province.

The School of Dentistry was organized in 1875 by the late Dean Willmott, D.D.S., L.D.S., LL.D., and the late Luke Teskey, M.D., L.D.S. The year following the late W. T. Stuart, B.A., M.D., C.M., was added to the staff. The founders conducted the school until 1893, when it was taken over by the board of directors, who still conduct its affairs.

In 1887 the school became affiliated with the University of Toronto, by which a department of dentistry was established, a course outlined, examinations conducted, and the degree of D.D S. conferred. The University has no teaching department, but has from time to time taught dental students in its lecture rooms and laboratories some of the subjects common to science, medicine and dentistry. Soon after the affiliation was accomplished with the University, Trinity University established a department of dentistry. This divided the candidates wishing the doctorate degree between the University and Trinity. Then followed the scheme of a combined examination by which the candidate received the degree from the University and the license from the board on the same examination papers. This was a great boon to the student, because he was saved the time and chances of a second examination. The effect was that the Trinity University had few, if any, candidates for its degree. When Trinity amalgamated with the University, then all its graduates became graduates of the University. The combined examinations, where the board of the Dental College and the University share in the appointment of examiners and the expenses incurred and in the commencement exercises for granting licenses and convocation for conferring of degrees, have been potent factors in drawing the University and the School of Dentistry closer and closer together. A very close relationship exists between the staff of the Dental School and the staff of the several faculties of the University. Many are members of both. Ever since there has been organized sports in the University, dental students have had a prominent part in them. It may be said without doubt that participation in the sports of the University has done more to foster close relationship and fraternity between the University and the Dental College (the name by which the school is familiarly known about the campus) than any other factor. It only required Hart House to completely cement the interest of dentistry in the University, where staff, graduates and undergraduates are members and participate in all its functions.

There is a common standard of matriculation course, examination and graduation for the school and the University. When students enter they present their credentials to both institutions, and if accepted by both, their names are entered on both rolls. Thus all dental students are undergraduates of the University and entitled to University privileges. The school collects its own fees and conducts its own teaching affairs and pays its own staff. The University collects its fees for examinations, special teaching, and student privileges.

The school began its teaching in small rooms on Richmond street. Later it was removed to Louisa street, where now stands the great chimney of T. Eaton Company. In 1896 a new building was erected where the east wing of the General Hospital now stands. The present building, with over 60,000 square feet of floor space, has been remodelled and enlarged several times in the ten years of its history. The demands of 1875 were modest as compared with to-day, two teachers giving part time as compared with over eighty, a dozen or more giving full time, a course of four months as compared with five years of eight months each, a matriculation of a practically no standard to junior matriculation for a four-year course.

In addition to the regular courses given to undergraduates in dentistry, a course has been established for training dental nurses. This course is intended to provide trained dental assistants for the dental practitioners. There is also under consideration a course for training dental mechanics. There is a course in graduate studies every autumn, where the most recent methods of practice are presented for the benefit of those now in practice.

The school has recently established extension courses and lectures in dentistry which are available to any group of fifteen dentists or more, in the Province of Ontario.

During the forty-six years of the existence of the school, it has graduated students supplying the demands of the people of this province and very largely the Western provinces of Canada. Its graduates have taken their full share of the responsibility of leadership in moral uplift, education, and municipal, local and Federal Government. It has done more than teach dental art and science, it has helped in no small way in the progress of Canada, by sending out to all parts of the country, citizens willing to assume leadership in times of peace and war.

DON'T DISCONTINUE THE USE OF ANYTHING UNTIL YOU KNOW WHY IT WAS BEGUN.

The dentist's prescription for tooth decay is diet, the tooth brush, prophylaxis, tooth filling and local drug applications. These, if properly applied, are effective in preventing decay and periclasia, but since it is almost impossible to apply all of them or any of them correctly, it is well not to throw away any one of them until it is certain that the others are being properly applied. Some physicians are prone to deride the use of the tooth brush because it is not properly sterilized between brushings. This is not so serious when one remembers that the patient is immune to his own organisms and those left on the brush are no more liable to infect him than the ones left in his mouth at that same brushing. Some dentists, in discussing the tooth brush, give the public a wrong slant by saying "the tooth brush does not prevent decay." It is just as truthful to say that it will prevent decay. Both are right and both are wrong. If the surface of a tooth is brushed at proper intervals it will not decay, else our whole knowledge of the subject is wrong and clinical observation goes for nothing; but on the other hand, no tooth brush as ordinarily used reaches the chief points of beginning decay, and having once begun, no amount of brushing will stop it. It is attractive, audacious and spectacular to challenge what is ordinarily believed, especially before an audience not apprized of all the facts. The impression left on the minds of the layman is that the tooth brush is no good for anything, and, in fact, a detriment to health, and its use should be discontinued. Even though teeth were not hindered from decay by its use, it still would be useful to clean the mouth of decomposing material which often accumulates. It would be as useful as soap or the bath tub. Before the use of the tooth brush is discontinued, the diet and the mouth and teeth must be normal. Something rarely seen.

PROPOSED DIPLOMA IN PUBLIC DENTISTRY—CANADIANS ELIGIBLE.

The representative board which is the directing body of the British Dental Association, passed the following report of a committee:

"Resolved, that the universities of the United Kingdom and all licensing bodies be approached with a request to make provision for the institution of such a diploma and that the examination for the suggested diploma should be open to all dentists who hold a degree or license in dental surgery and who are duly registered in the dentists' register for the United Kingdom or who hold a degree or license admitting them to the register in any of His Majesty's dominions or colonies."

Public dental service is reaching larger proportions in Canada as time goes on. Schools, hospitals, penal institutions, asylums and old people's homes will shortly have dentists attached. This kind of dental service has many special features which are not to be found in private practice. Such service needs in addition to professional skill a knowledge of administration, public speaking, economics and general business training.

NOTES.

For over half a century diseases of the teeth and gums have been considered as separate from the general bodily system. This was quite natural; dentists knew nothing but teeth and very little of them, while the physician had enough to do to look after the balance of the body, knowing nothing about teeth. With what has been known of disease for these hundreds of years, it is a marvel that dentists or physicians could believe that teeth could decay, become infected, loosen and fall out without having any effect on the general health or that the functions of the body could be normal and all this going on.

One of the most common symptoms of rickets is delayed dentition. Often no teeth appear until after one year of age.

Dr. Waite A. Cotton, New York, gives his views on the relationship between diet, decay of teeth and diseases of the gums in the May "Dental Digest." Decay is influenced by the mucous and not by the saliva, as generally believed. Pyorrhea is not of local origin, but a general disease associated with ingestion and elimination.

Dr. D. D. Leitch addressed the Edmonton Dental Society on the relation of vitamines to the development of the teeth and bones.

At a recent meeting of the Yukon Legislature, a bill was passed allowing any dentist holding a license of any Canadian Province or the States of Washington or Oregon to practice in the Territory. Dentists are scarce.

Dr. Pond, the school dentist of Vancouver, in an address to the Dickens Club explained some of the difficulties attending his duties.

A Montreal dental student has been fined for practicing dentistry in Montreal without a license.

During the past two years, Dr. F. J. Conboy has been acting as director of dental services for the Education Department of the Province of Ontario, giving one day a week. The department decided to have full time service, but provided only $4,000 as salary, which Dr. Conboy could not accept. As a result, the position is vacant.

Dr. Gill addressed the High School students of Victoria on dentistry.

The father of a boy attending the schools of Windsor, Ontario, has entered action against the school dentist and the school board for damages for extracting teeth without specific direction.

Dr. R. J. Robins, Haileybury, died of pleuro-pneumonia, March 19th, 1921.

Dr. C. P. Sherman, Toronto, died in March, leaving an estate of $2,500 to his mother and nieces.

The Board of Education of Port Arthur find it necessary to curtail expenses, and have decided to close the dental clinic as well as the domestic science department and manual training.

Dr. Ross Currie, St. John, N.B., has moved to Victoria, B.C.

The newspaper reports of the recent meeting of the Ontario Dental Association indicate that the time has not yet arrived when that lie, "The tortures of the dental chair," can be dispensed with as a heading. The publicity committee should be held responsible for such false headings.

Mr. Norman Summerville, K.C., addressed the members of the Ontario Dental Association very acceptably on "Confidence in Fellowman."

The Dental Board of Quebec is asking the courts for a stated case against dental companies practicing dentistry in the province. It was decided in the Ontario courts that a company cannot practice a profession. So it should be in Quebec.

The governors of the Ontario Dental Association for the year 1921-22 are M. W. Rutherford, C. E. Brooks, E. J. Gausby, A. G. Plaxton, W. L. Chalmers, and F. J. Conboy.

Dr. F. P. Moore, of Hamilton, is the new president of the Ontario Dental Association. It is many years since Hamilton has had a president. The profession in Hamilton are worthy of great praise for the support they have given every progressive enterprise during the past decade.

Dr. W. J. Hutchison, a dental assistant in the dental office of Dr. Masson, Montreal, brought suit against his employer to recover $150 for two weeks' salary following summary dismissal.

Dr. Zuckerman, a New York dentist, died in Toronto after a short illness, May 14th, 1921.

Three hundred and thirty-eight dollars were realized in a tag day collection in Victoria for a dental school clinic.

E. M. Laurin and B. L. Hyams won first and second medals, respectively, at the recent McGill dental examinations.

Saskatchewan Dental Society met in Moose Jaw, May 31 and June 1st, 1921.

Dr. Mills, a physician practicing in Philadelphia, in closing a few remarks on the all-too-frequent extraction of teeth on X-ray findings only, said if the craze for violent removal goes on it will come to pass that we shall have a gutless, glandless, toothless and perhaps, thanks to psychology and surgery, a witless race.

Dr. Baxter addressed the Kiwanians of Montreal on "Dentistry," May 6th, 1921.

Dr. H. Wightman, Peterboro, died at the age of 48 years, May 10, 1921.

The names of those chosen for officers at a meeting of the Board of Directors of the Royal College of Dental Surgeons recently are: President, Dr. M. A. Morrison, Peterboro; Vice-President, Dr. A. D. A. Mason, Toronto; Registrar, Dr. E. E. Bruce, Kincardine; Secretary, Dr. Wilmot. To the list of directors already given have now been added the names of Dr. S. Davidson, Ottawa, and Hon. R. H. Grant, Minister of Education.

The lateness of this issue may be ascribed to the fact that the printers of Toronto left their employment on June 1st, following upon the refusal of the master printers to accede to their unwarranted demands. We trust that our subscribers will appreciate our position and are pleased to announce that arrangements have been made to take care of future issues in the usual course.

OBITUARY.

Charles Henry Waldron, formerly of Toronto, died at the home of his son, Dr. Carl Waldron, Minneapolis.

Dr. Chas. Waldron was born in Murray township, Ontario, on December 20, 1854, the only son of the late James T. and Martha S. Waldron. Removing with his parents in 1855 to New York State, he grew up and received his primary and preparatory education at Fairport, New York. He completed his university work at Victoria University, Cobourg, Ont. Following his graduation he devoted his time to teaching in high schools and preparatory colleges until an increasing impairment of hearing necessitated a change of endeavor.

He then took up the study of dentistry at the Royal College of Dental Surgeons, Toronto, graduating from that institution in 1892, and commencing the practice of dentistry on Spadina avenue. He retired in December, 1919, on account of ill-health.

Dr. Waldron was a keen student of dentistry, and his interest in the development and advances of his chosen profession never lagged. His was a familiar figure at all meetings of the Toronto and Ontario Dental Societies of which he was an active member. He was a Mason and a member of the Ancient Order of United Workmen, the Royal Templars of Temperance, and the Canadian Order of Woodmen of the World. He was very active in Woodmen affairs until forced to retire by illness. Dr. Waldron was a member of Trinity Methodist Church, Toronto.

In 1882 he married Miss Harriet Annie Bowles of Brighton, Ont., who with his son survive him. His remains were interred in the Lakewood Cemetery, Minneapolis, Minn., April 18, 1921.

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Dominion Dental Journal

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Original Communications

THE EVOLUTION OF THE PERIODONTAL PUS-POCKET

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Instructor in Periodontia, Columbia University, New York City.

ULCERATIVE pockets overlying cementum may be defined as the lesions produced by the establishment of infection in the cemental gingivae and pericementum, whereby, through suppurative process, these tissues have been detached from the cementum. Dependant upon the amount and nature of the loss of tissue, ulcerative pockets may be classified in two main groups—the first, in which the lesion is confined to the cemental gingiva, and the second, in which extension of the ulcerative process has taken place into the pericementum. An understanding of pocket formation in dental periclasia is impossible without an adequate conception of the histological complex in which the pathological changes are initiated. The importance of the gingivae in their relationship to the pericementum, both in health and disease, necessitates the following short description of their minute anatomy.

The tissues of the oral cavity known as the gingivae include all the soft tissues which infest the cervical portions of the crowns and roots of the teeth, to the level of the crests of the alveolar process. The main bulk of the gingival tissue rests upon the crests of the alveolar process, and is supported by them. From these crests to the gingival line, the amelo-cemental junction, and attached to the cementum, is that division of these tissues known as the cemental gingivae. The cemental gingivae are attached to the alveolar crests by fibres of the periosteum and certain principal fibres which are inserted in the cementum.

Rising from the cemental gingivae and supported by them are wedge-shaped tissue extensions which encircle the enamel at the cervix. These are known as the marginal gingivae. By their contact with the enamel they form the so-called gingival crevice, the deepest portion of which is bounded by the first attachment of the cemental gingivae at the amelo-cemental junction.

The epithelium which covers the gingivae is of the stratified squamous type, and rests on a thin basement membrane. It differs from that of the gums, the tissue of which is continuous with the cemental gingiva and which covers the alveolar process, in that it becomes thicker and stronger progressively from a point of approximately opposite the crest of the alveolar process to the crest of the marginal gingiva. A characteristic of the gingivae is the invagination into the epthelium of finger-like papillae of connective tissue. The distribution of the epithelium on the crevicular* surface of the marginal gingiva is an outstanding feature, because, as a rule, it is unusually thin. Occasionally breaks can be noticed in this lining, where the epithelium is absent, and again, imperfect junctions of the crevicular epithelium with the cementum are frequently observed. These facts—its extreme thinness, the possible presence of breaks on the surface, 'and imperfect junctions, render this crevicular surface the weakest link in the chain of epithelial covering in the mouth.

The gingivae have an extremely rich blood supply, which is derived from the pericemental and periosteal blood-vessels, as well as those of the adjoining gums. The connective tissue of each papilla carries an arteriole which passes to its extremity, where it terminates in a capillary loop and returns as a vein. This circulatory apparatus is designed to carry nourishment to all the epithelial cells. It is commonly seen in the microscopic study of these tissues, that the cells separating the capillary loops from the saliva are very few in number.

The progression of the inflammatory process in the evolution of a pus-pocket may be classified into the following four stages:

1. Early inflammatory reaction following the initial invasion of bacteria.
2. Loss of some of the epithelial lining at the extremity of the gingival crevice, and the establishment of ulceration in the cemental gingiva.
3. Progressive loss of tissue, and the formation of a pocket in the cemental gingiva.
4. Extension of the pocket into the pericementum.

Bacterial invasion of the gingivae, in practically all cases except the phagedenic type, takes place from the ginvival crevice through the crevicular surface of the marginal gingiva. A microscopic examination of a large number of early lesions in the gingivae has demonstrated to the essayist that the great majority of infections occur at the base of the gingival crevice, where, through imperfect junction of the epithelial cells with the cementum, or because of the extreme thinness of this defensive covering, the tissue underlying this area is not adequately protected. The earliest lesion which occurs following bacterial invasion in a minute area of small cell infiltration, the inflammatory re-action to the micro-organisms. Leucocytes escape from this area through the thin layer of epithelium, and appear, along with desquamated epithelial cells, on the crevicular surface of the marginal gingiva.

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* Crevicular Adjective—relating to the gingeval crevice.

When, through progression of the inflammatory process, ulceration has been established at the base of the gingival crevice, after the necrotic epithelium is cast off, the attachment of the principal fibres of the cemental gingiva, at the gingival line, is involved. Due to the action of ferments liberated, either by the polymorphonuclear leucocytes or by bacteria, tissue solution takes place, resulting in the stripping of gingival tissue from the cementum and the formation of a small pocket. Penetration of this pocket into the deeper tissues, following further bacterial invasion, results in the complete loss of attachment of the cemental gingiva to the cementum, and in the establishment of ulceration and pocket formation in the pericementum. The soft tissues covering the denuded cementum present a surface which is in a state of constant inflammatory reaction. This varies within wide limits, depending upon the amount and nature of the injurious agents and on the severity and character of the injury. The cementum underlying the pocket and from which the soft tissues have been detached, always presents a septic surface. This is due to the frequency of serumal deposits and to the retained ends of the principal fibres in the insertion layer.

The type of exudation from periodontal pockets is commonly known as pus, and is made up of leucocytes in abundance, serum in varying quantities, fibrin usually of scant amount, and living and dead bacteria. Of the leucocytes, the polymorphonuclear predominates, although endothelial leucocytes and lymphocytes may be fairly abundant.

It must not be overlooked that when a pus-pocket is present in the pericementum, it is usually but a part of a more involved pathological complex. While the stages in the histo-pathology of the actual pus-pocket are essentially the same in all cases, the formation of a pus-pocket in the pericementum is a phenomenon preceded in many cases by much more complicated and deeper changes than simple gingivitis. The ideal requisites for rapid and deep pocket extension are alveolar resorption, lowered resistance in all or part of the pericementum, and gingivitis. Lowered resistance in the pericementum is frequently brought about by excessive mechanical function of the teeth or, upon the other hand, by their disuse.

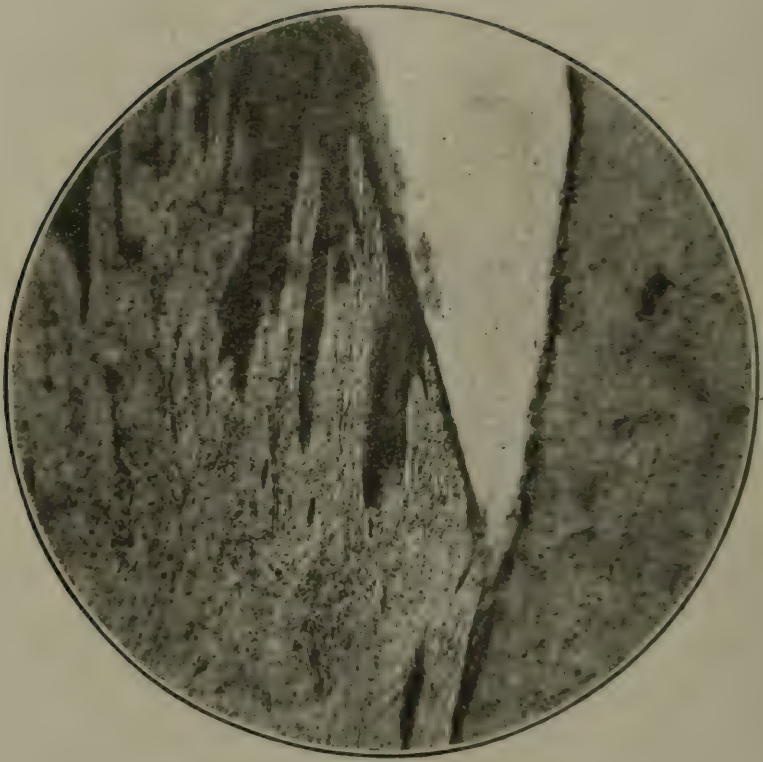

FIG. NO. 1

In Fig. No. 1 is shown the gingival crevice and the attachment of the marginal gingiva to the tooth. Note the extremely thin protective covering of stratified squamous epithelium on the crevicular surface of the marginal gingiva.

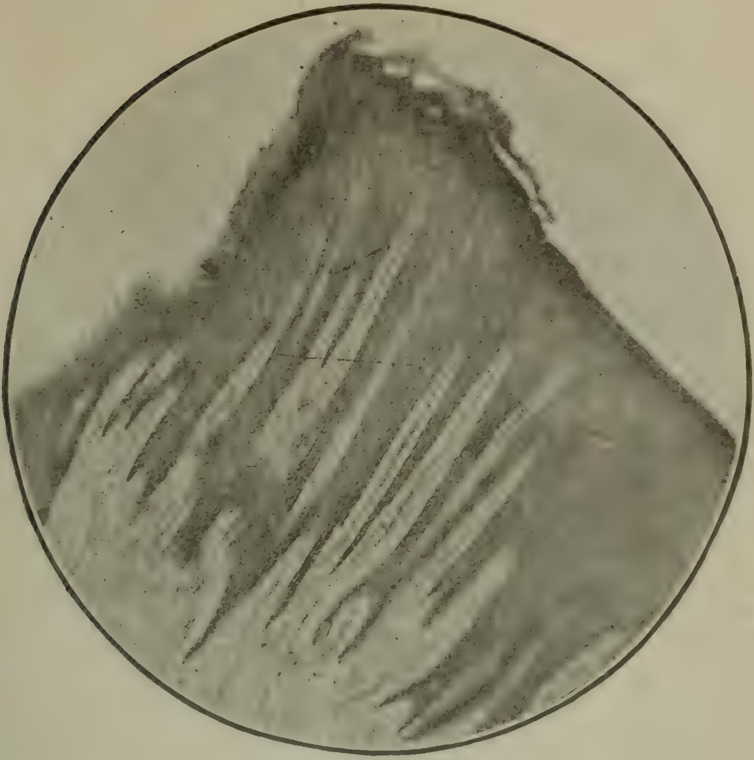

FIG. NO. 2.

In Fig. No. 2. showing the marginal gingiva, note the extremely thick covering of epithelium on the outer surface. Into this epithelium are projected long finger-like extensions of the underlying connective tissue.

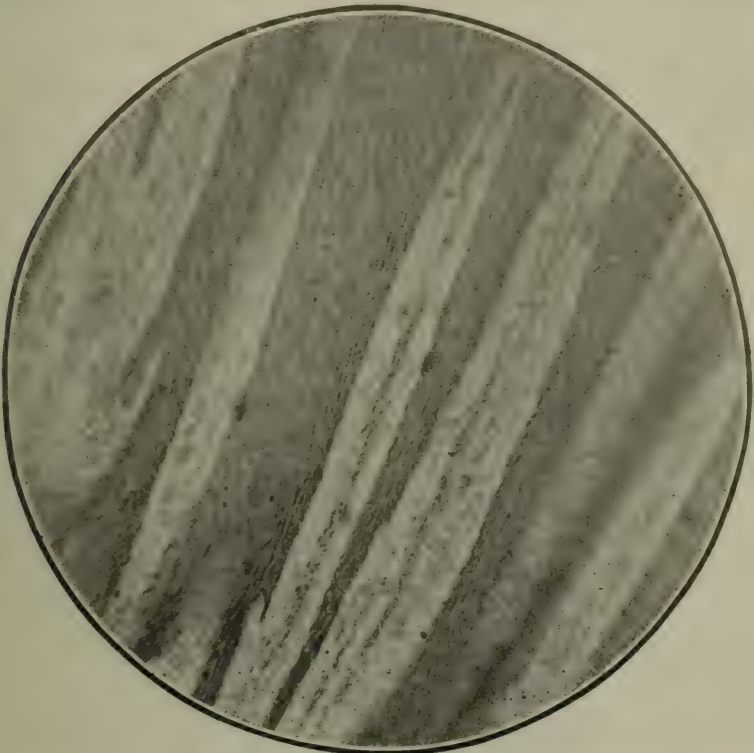

FIG. NO. 3.

Fig. No. 3 is a high magnification of the connective tissue extensions into the epithelium. Each papilla supports a circulatory system comprising an arteriole, capillary loop, and returning vein. The blood is carried by the arteriole to the end of the connective tissue papilla, passing there through the capillary into the returning vein.

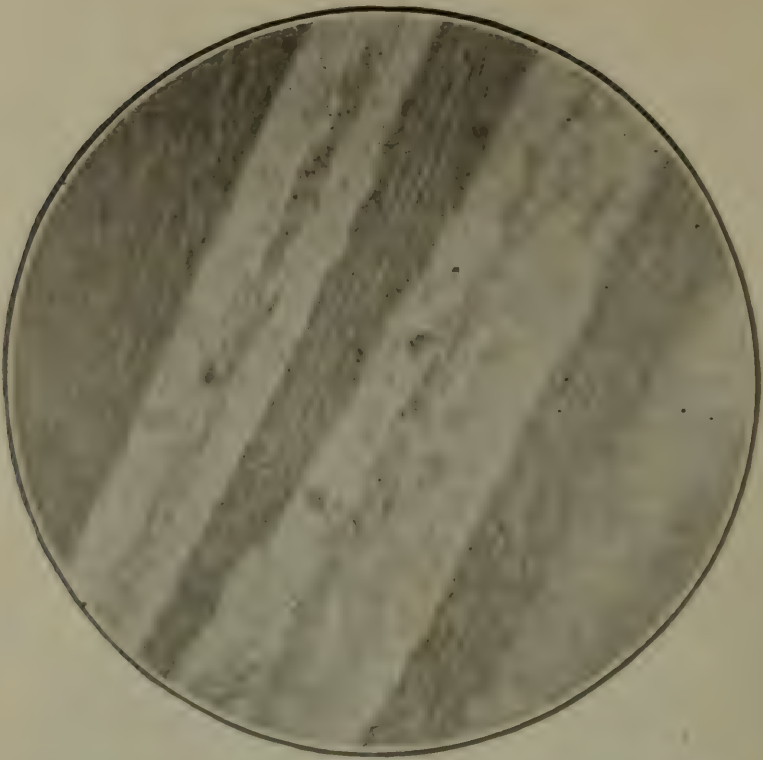

FIG. NO. 4.

Fig. No. 4 is a very high magnification of two connective tissue papillae. In [illegible] may be seen quite distinctly, the arteriole and returning vein lying side by side.

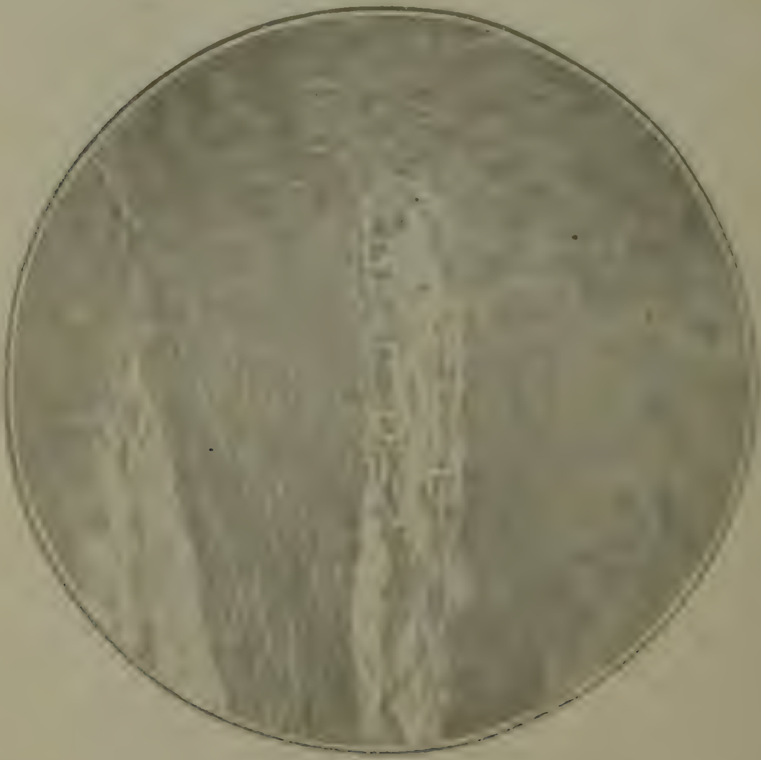

FIG. NO. 5.

Fig. No. 5 is a good example of a high magnification of [illegible] of one of the connective tissue papillae. [illegible]

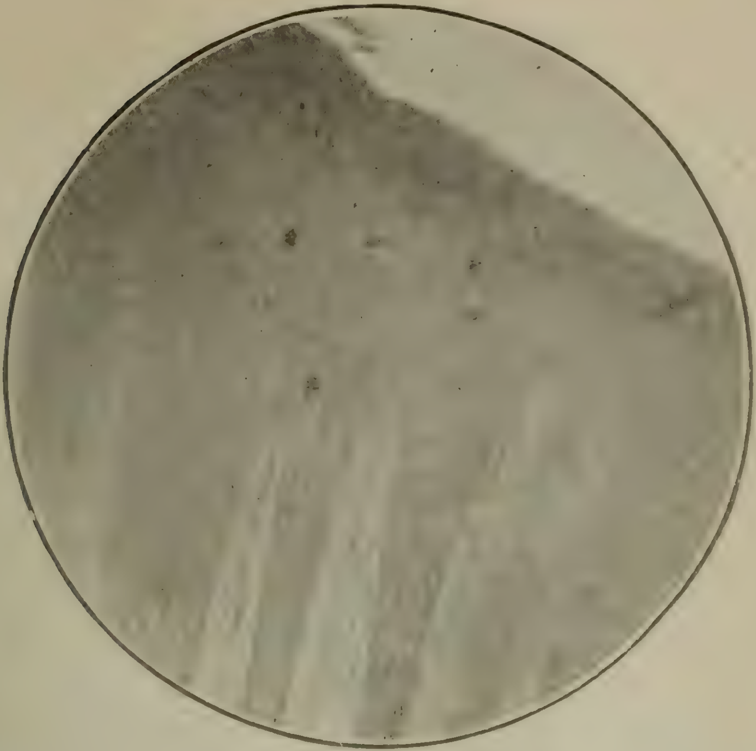

FIG. NO. 6.

Fig. No. 6 shows the very thin layer of epithelium which covers the capillary loops and protects the blood-stream from the oral fluids. This arrangement, which is ideal from the standpoint of nourishment of the epithelium, becomes a weakness in certain infective processes, evidenced in phagedenic gingivitis, and accounts, in part, for the rapid extension of ulceration.

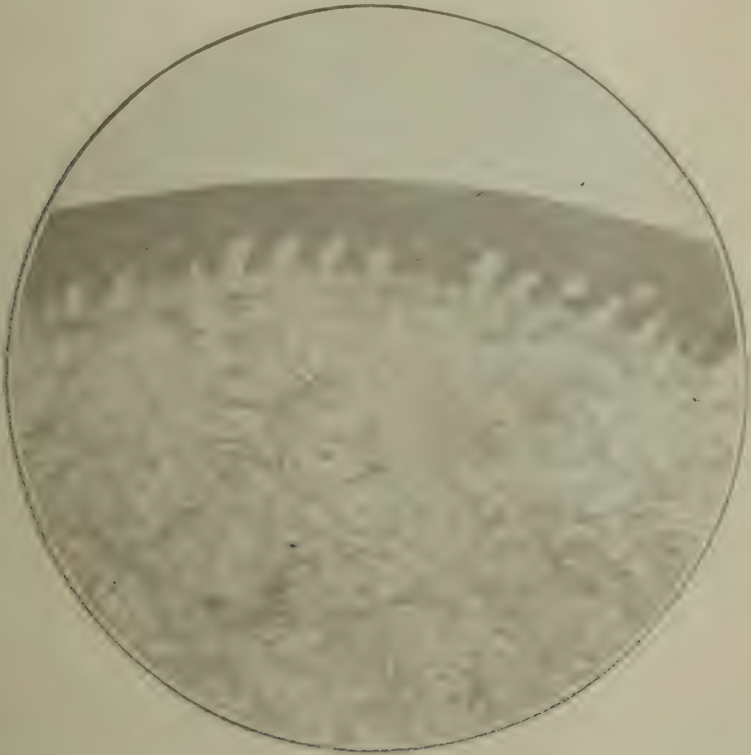

FIG. NO. 7.

Fig. No. 7. [illegible]

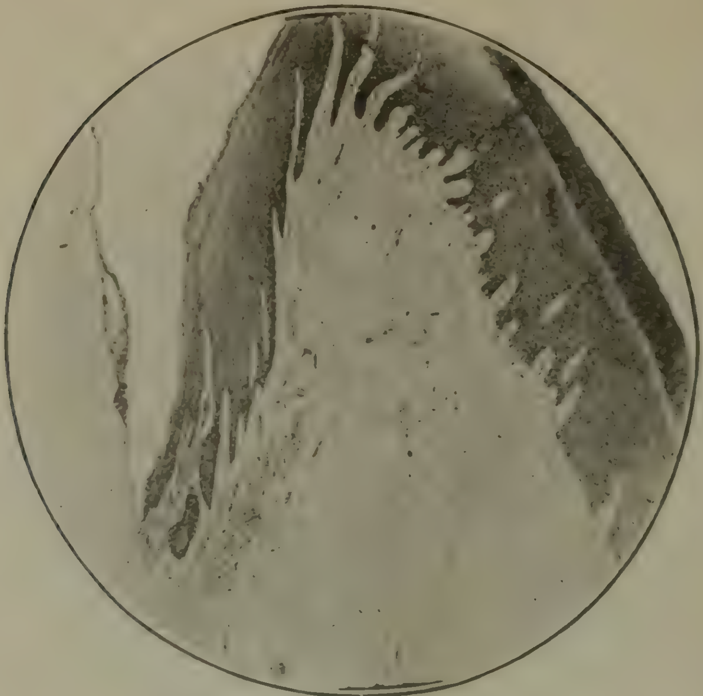

FIG. NO. 8

Fig. No. 8.—Infection of the gingivae, as a rule, takes place at the extremity of the gingival crevice. A defective junction of the epithelium on the crevicular surface of the marginal gingival with the tooth, creates an easy avenue for bacterial invasion at this point. In Fig. 8 there is shown an example of an imperfect junction of the epithelium with the tooth.

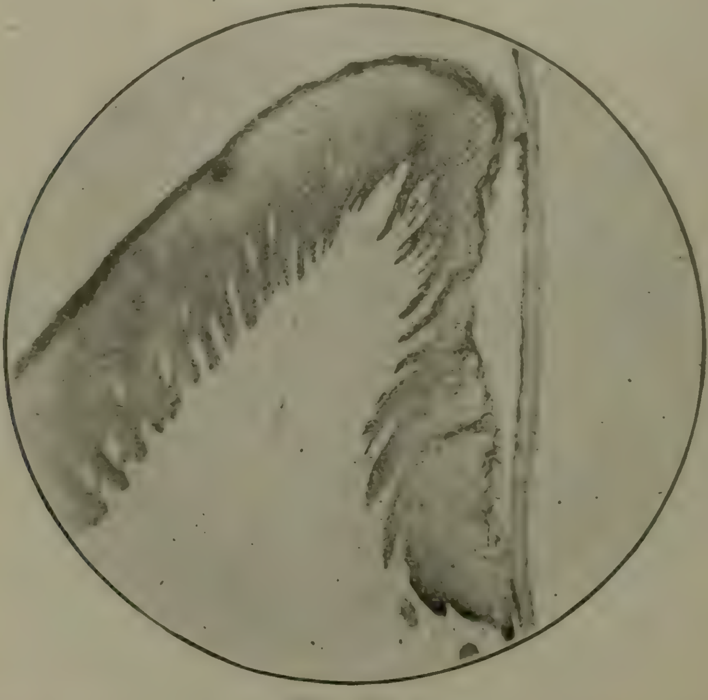

FIG. NO. 9.

Fig. No. 9.—Occasionally, besides the weakness of the gingivae to infection, just described, viz.: an extremely thin epithelial covering on the crevicular surface, and an imperfect junction, a third one is noted. In this class, breaks in the crevicular epithelium are found, in which the underlying connective tissue is devoid of epithelial protection. Two such breaks may be seen in Fig. No. 9.

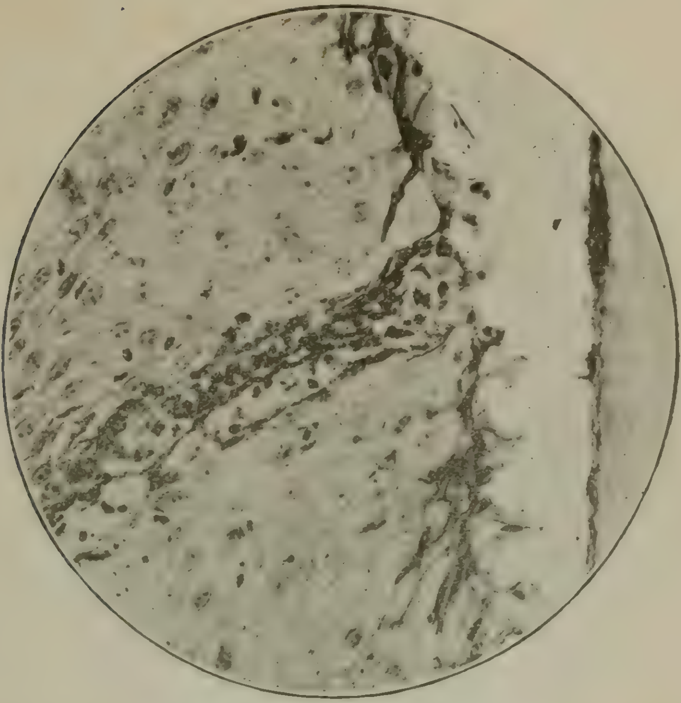

FIG. NO. 10.

Fig. No. 10.—This figure is a very high magnification of one of the breaks **described in** Fig. No. 9. Note the blood vessel extending almost to the gingival crevice. **Clumps of** bacteria on the tooth surface just opposite are demonstrated.

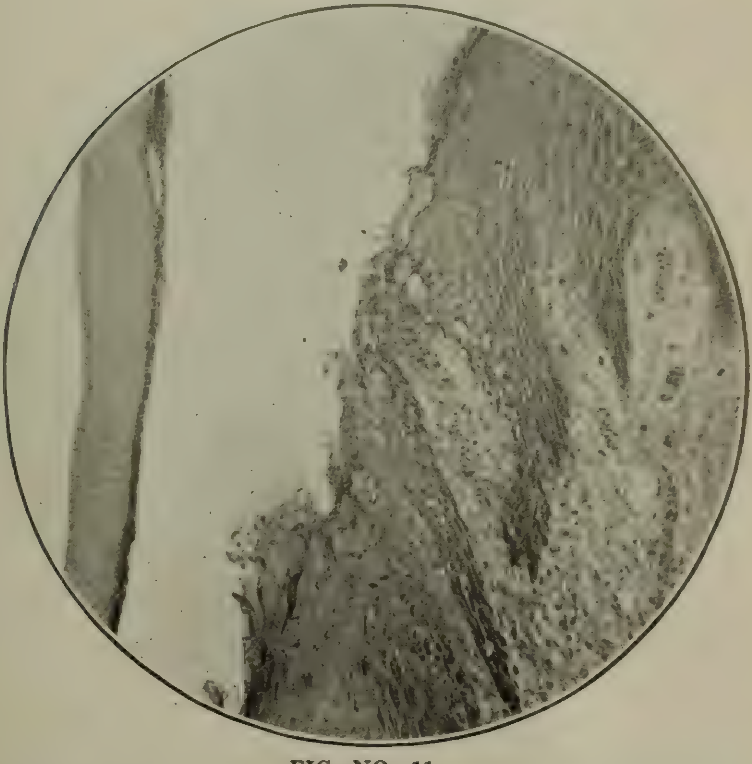

FIG. NO. 11.

Fig. No. 11.—In Fig. No. 11, another such break in the epithelial covering **is evidenced.** Again, note the blood vessel passing to the gingival crevice.

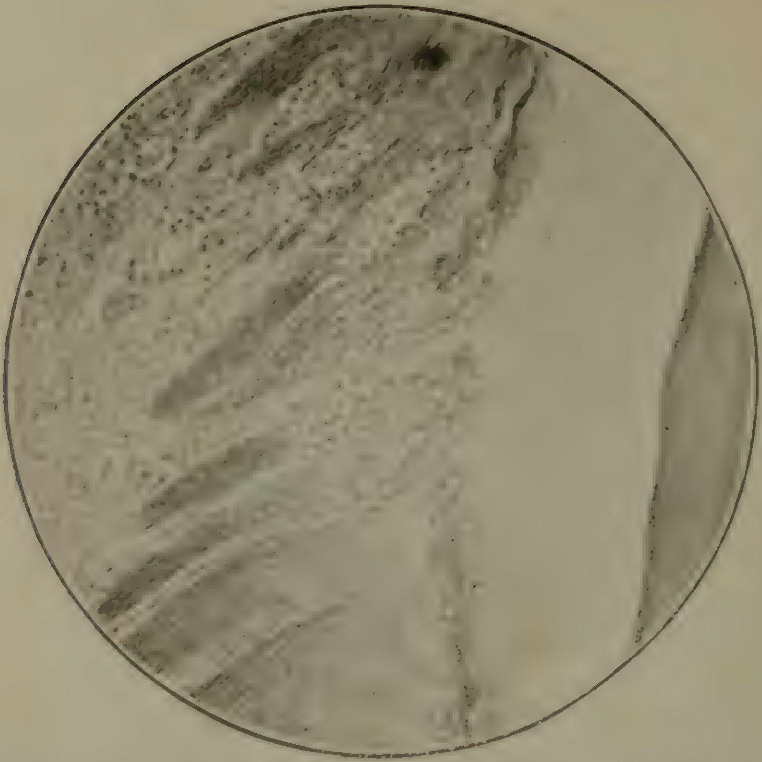

FIG. NO. 12.

Fig. No. 12.—Several breaks are shown in Fig. No. 12. Such histological defects must, in certain cases, be regarded as factors in gingival infection.

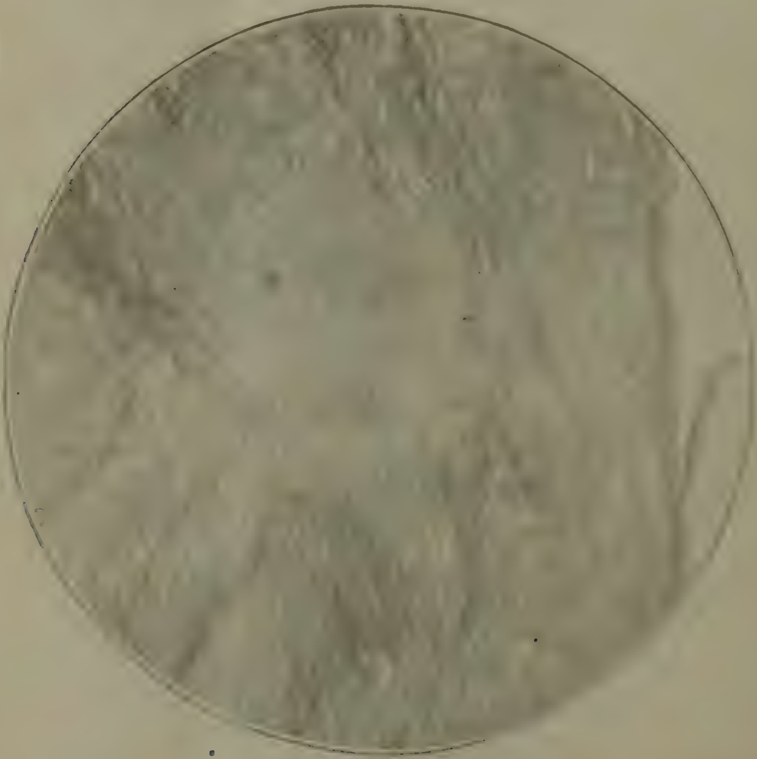

FIG. NO. 13.

Fig. No. 13.—In the marginal gingiva is found [illegible] in the epithelium. That [illegible] the crest of the marginal gingiva. [illegible] Fig. No. 13.

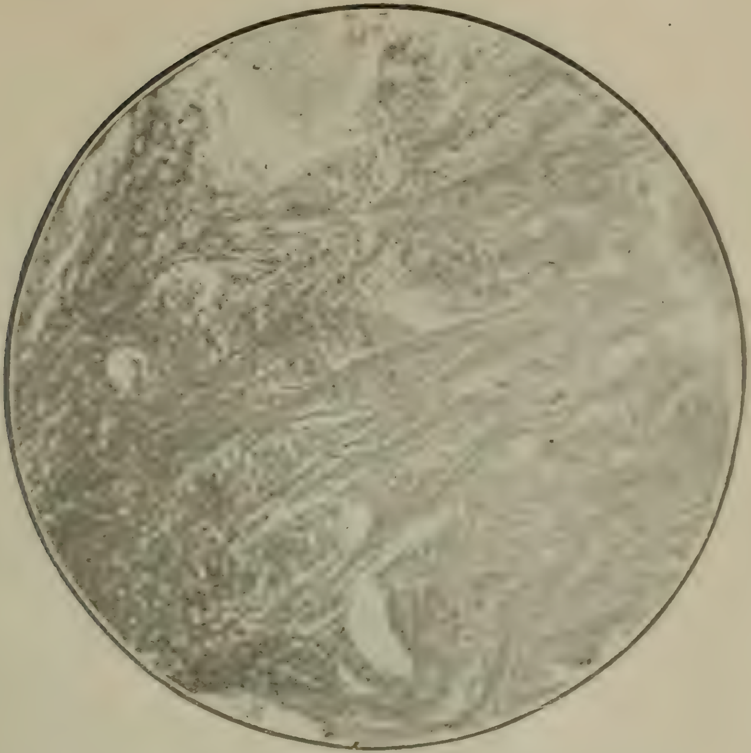

FIG. NO. 14.

Fig. No. 14.—In Fig. No. 14, is shown the second group of principal fibres, which passes mesio-distally from tooth to tooth through the cemental gingiva. It helps to hold the contact points of the teeth together, and is known as the "trans-septal" group.

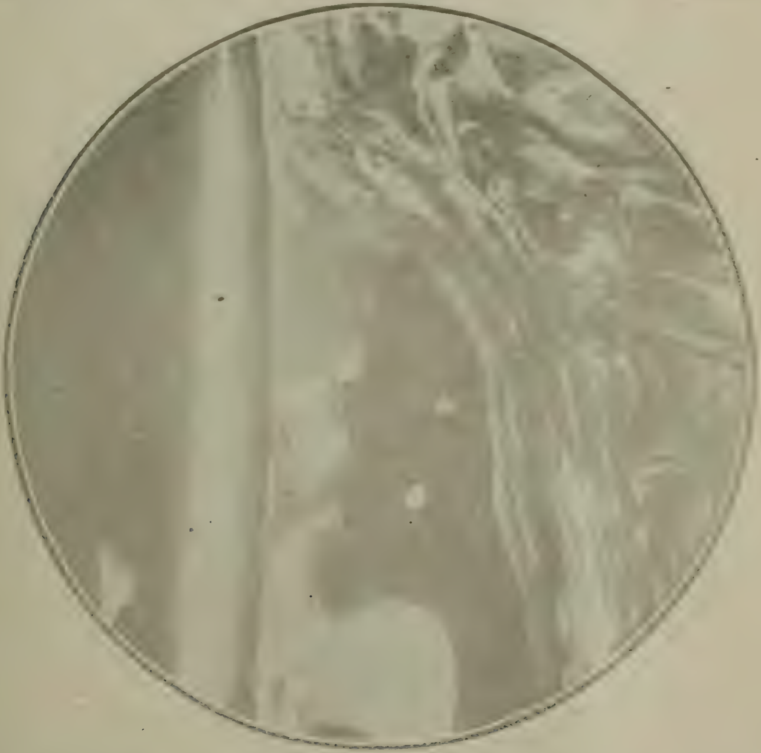

FIG. NO. 15.

Fig. No. 15.—Next in order is found a [illegible] group of fibres which [illegible] to the cementum and [illegible] in the crest of the alveolar process. It is termed the "alveolar crest" group and [illegible] of the teeth in the alveolus. In Fig. No. 15, this group is [illegible] the line of demarcation between the [illegible] and the cementum, [illegible] of the section, the [illegible] has been [illegible] from the [illegible].

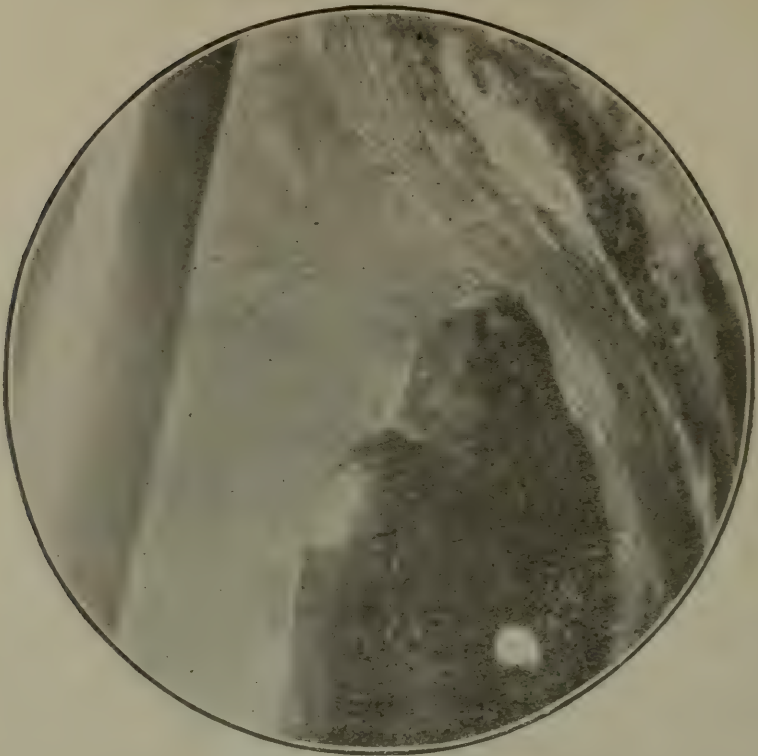

FIG. NO. 16.

Fig. No. 16 is a higher magnification of the same group, and shows in detail, the courses of its many fibres.

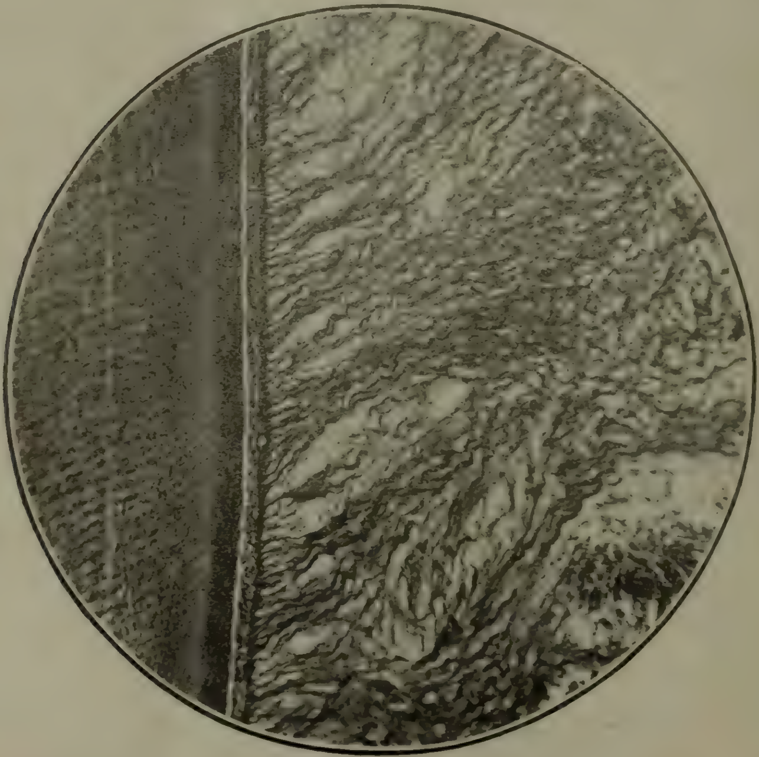

FIG. NO. 17.

Fig. No. 17.—Apical to the "alveolar crest" group, are found the "horizontal" and "oblique" groups, which pass from the cementum to the wall of the alveolar process. The "oblique" group is by far the larger, and constitutes the bulk of the pericementum. The fibres, from their attachment to the process, pass in a slightly apical direction to the tooth. This grouping is shown in Fig. No. 17.

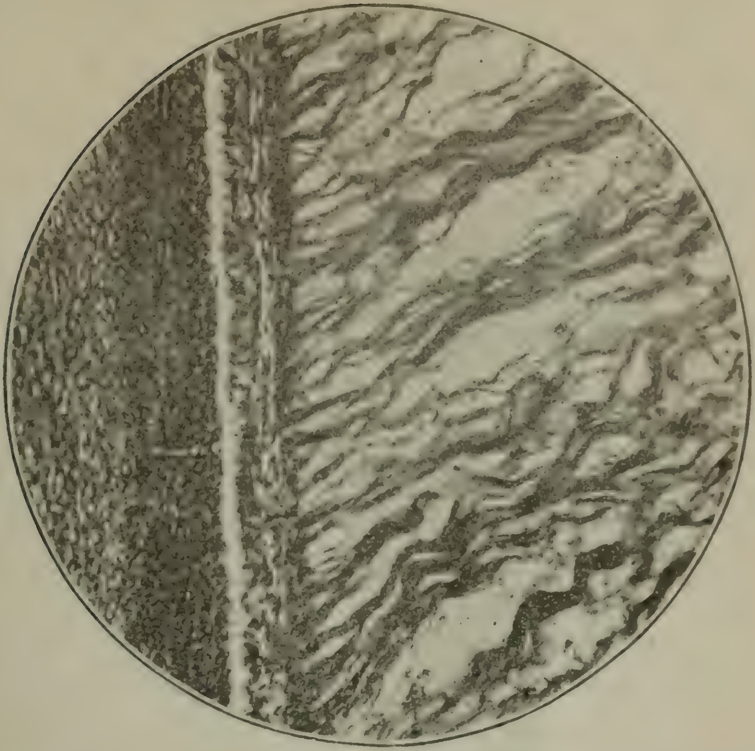

FIG. NO. 18.

In Fig. No. 18 these fibres are shown highly magnified. Their function is to support the tooth during occlusal strain.

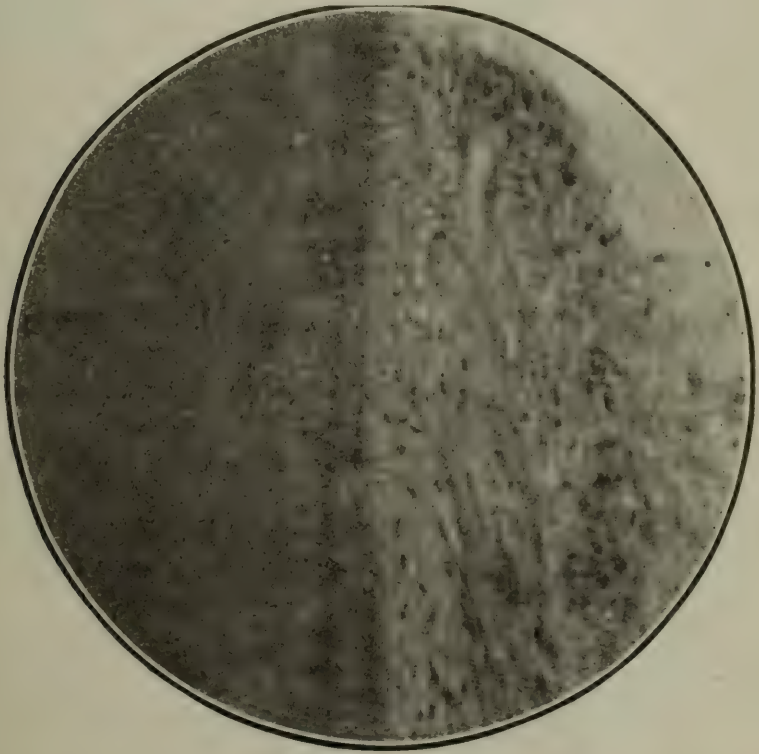

FIG. NO. 19.

Fig. No. 19 demonstrates the insertion of the principal fibres of the gingivae and pericementum into the cementum. The cementum, upon the loss of the principal fibres in pocket formation, presents a pitted surface which affords an ideal lodging place for bacteria and their products.

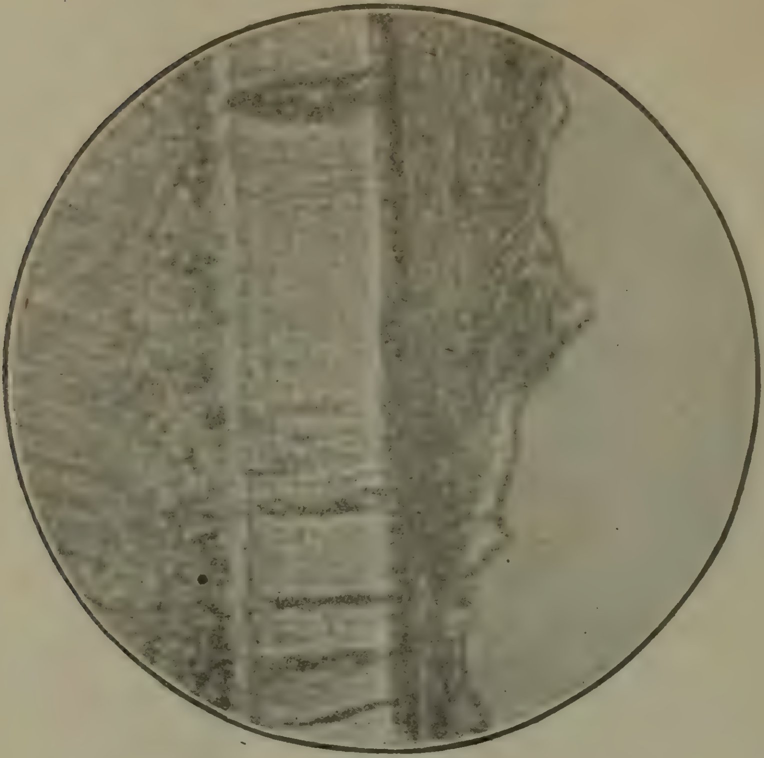

FIG. NO. 20.

Fig. No. 20.—The cementum underlying the average pus-pocket is practically homogeneous. It differs from the apical cementum in that it usually contains no cement corpuscles. It is extremely thin, from a clinical standpoint, and in many cases is about the same thickness as a human scalp hair. In Fig. No. 20, a section of this cementum with some attached pericementum is shown. The progression of the inflammatory process in the evolution of a pus-pocket, may be classified into the following four stages: 1. Early inflammatory reaction following the initial invasion of bacteria. 2. Loss of some of the epithelial lining at the extremity of the gingival crevice, and the establishment of ulceration in the cemental gingiva. 3. Progressive loss of tissue, and the formation of a pocket in the cemental gingiva. 4. Extension of the pocket into the pericementum.

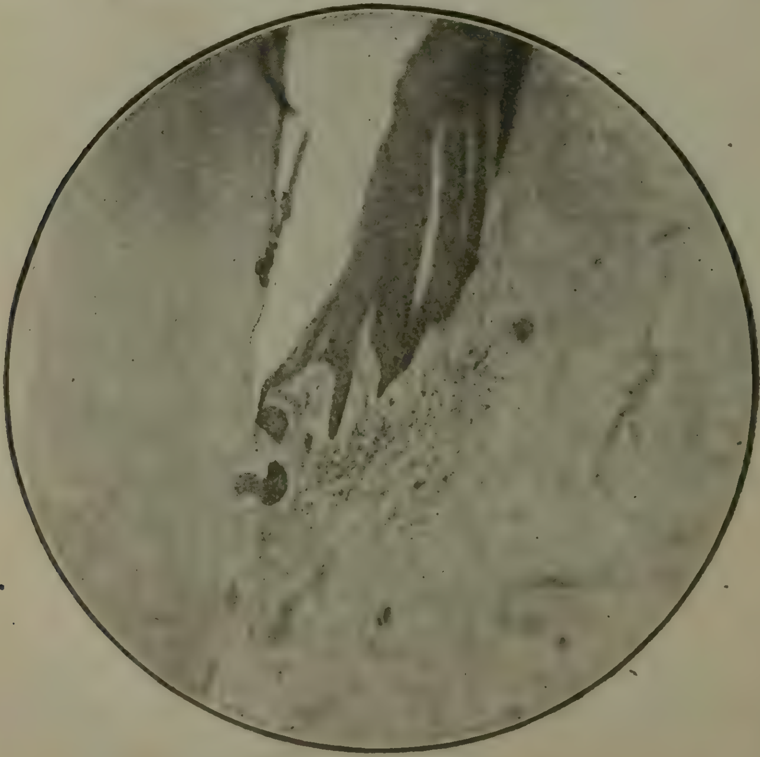

FIG. NO. 21.

Fig. No. 21.—Bacterial invasion of the gingivae, as a rule, takes place at the basal extremity of the gingival crevice. In Fig. No. 21, a faulty junction of the crevicular epithel-

ium with the tooth is shown, and, in the gingival tissue immediately underlying it, may be noted a minute area of small cell infiltration, the inflammatory reaction to the invading micro-organisms. This is the earliest lesion which occurs in the evolution of a pus-pocket, and cannot be demonstrated clinically.

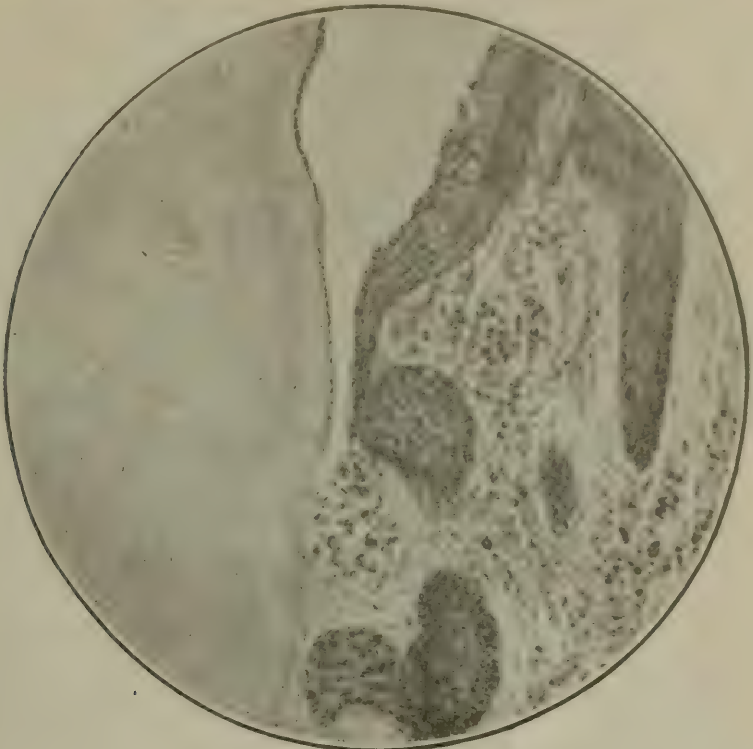

FIG. NO. 22.

Fig. No. 22.—In Fig. No. 22 a higher magnification of the foregoing lesion is shown. The imperfection of the junction of the epithelium with the tooth is plainly evidenced. The infiltration is of the plasma cell type.

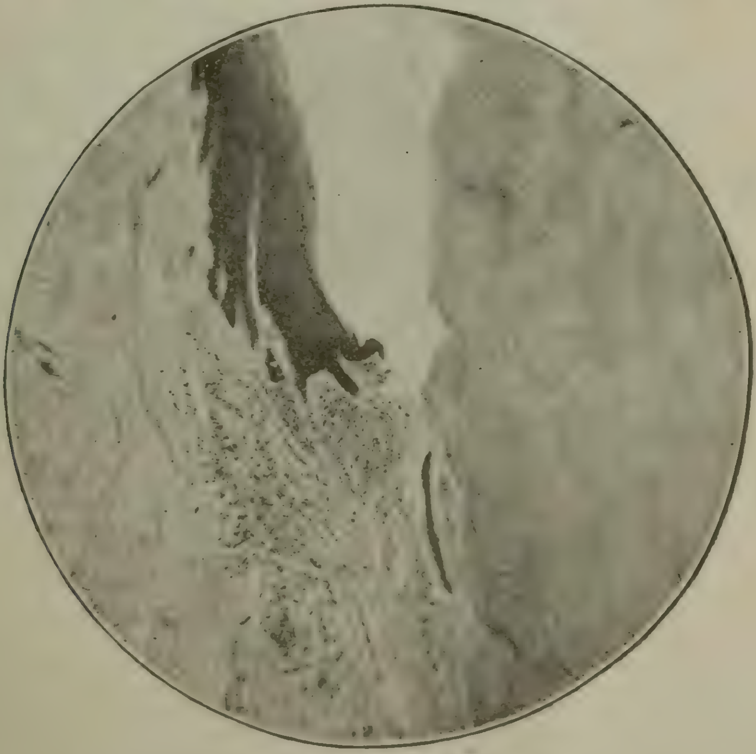

FIG. NO. 23.

Fig. No. 23.—In Fig. No. 23 a condition is shown which may be regarded as a second stage of inflammatory progression in the evolution of a pus-pocket. It will be noted at once that

the inflammatory infiltration is more extensive than that shown in Figures Nos. 21 and 22, and that some of the epithelium at the extremity of the gingival crevice has been lost. Superficial loss of tissue lying between the remaining epithelium and the tooth structure is taking place, the condition being one of ulceration.

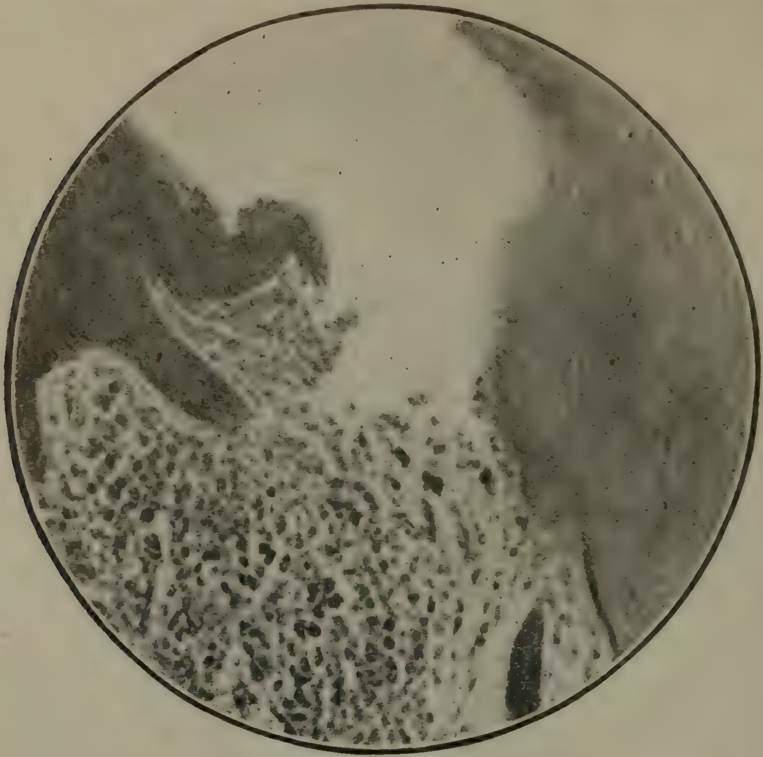

FIG. NO. 24.

Fig. No. 24.—This figure is a high magnification of the inflammatory process occurring in the tissue lying between the epithelium and the tooth, as shown in Fig. 23. It is clearly shown that some loss of tissue has taken place, and the remaining superficial tissue is in a state of ulceration.

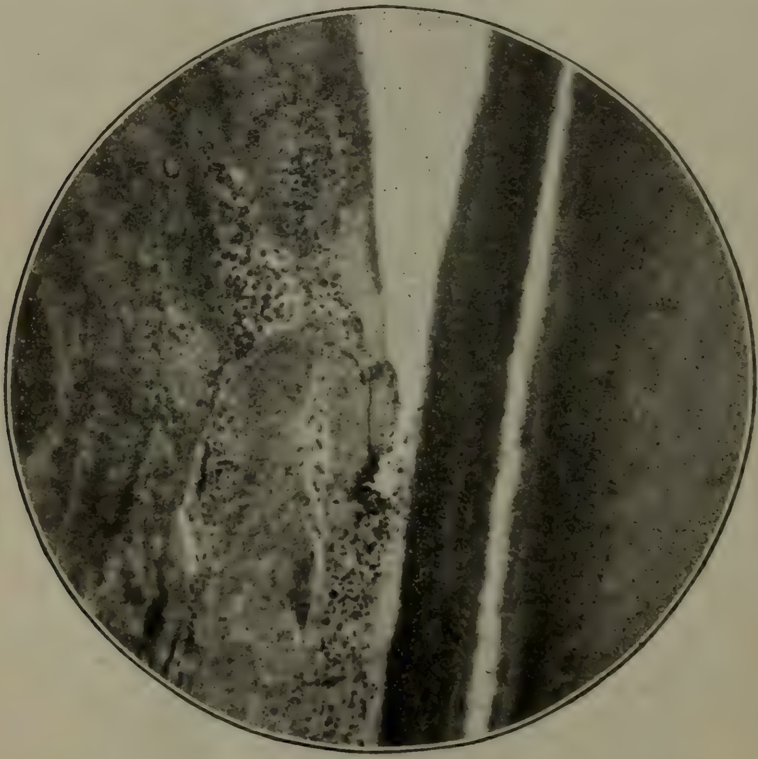

FIG. NO. 25.

In Fig. No. 25, the third stage in the evolution of a pus-pocket is demonstrated. The ulcerative process has resulted in the partial denudation of cementum, and in the cemental gingiva a small pocket has been formed. Note, in this case, that extension of the ulcerative process is not proceeding along the cemental surface; and also the evidence of inflammatory reaction in advance of the pus-pocket.

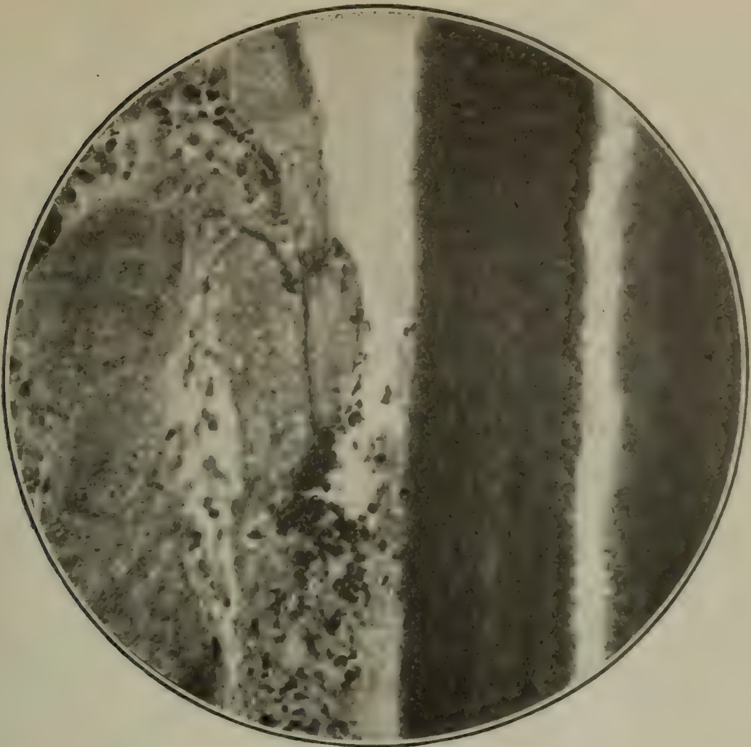

FIG. NO. 26.

Fig. No. 26 shows a high magnification of the pocket just described. Note that the pocket extends from the crevicular epithelium, which may be seen near the top of the slide, to the surface of the ulcer.

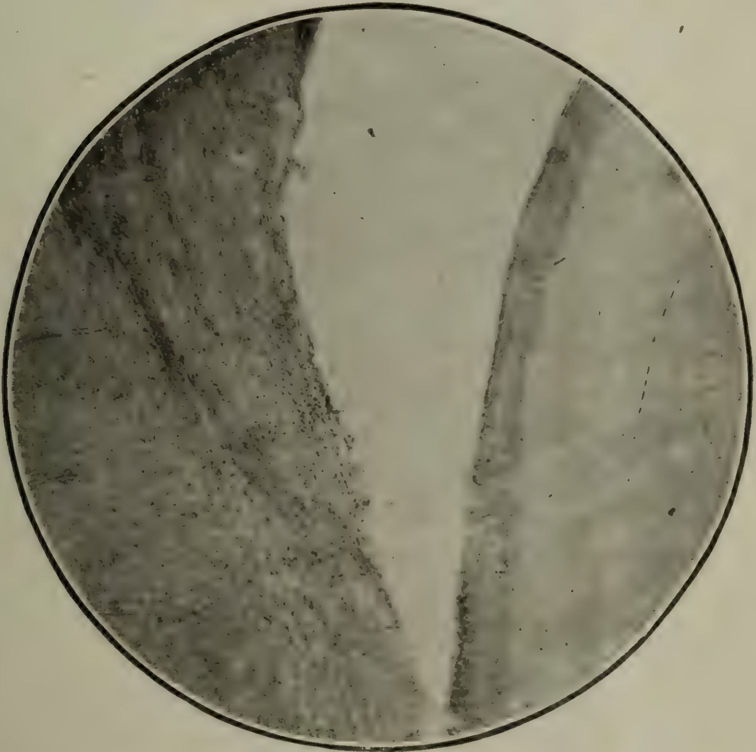

FIG. NO. 27.

In Fig. No. 27 is an example of the fourth stage in the pathological evolution of a pus-pocket. Loss of tissue, denudation of cementum and pocket formation, have progressed into the pericementum. All the soft tissue facing the cemental surface is in a state of ulceration.

NATIONAL DENTAL CONVENTION.

MILWAUKEE, AUGUST 15-19, 1921

Preliminary Program of Scientific Sessions.

OPERATIVE DENTISTRY, MATERIA MEDICA AND THERAPEUTICS.

TUESDAY AFTERNOON, AUG. 16.

2.00 p.m. to 4.00 p.m.

(Plankington Hall, Auditorium)

This section will present seven papers and five unit clinics. Three papers will be read Wednesday morning and two Thursday morning and the clinics demonstrating them will follow in the afternoons of same days, under the direction of the essayists:

"Fundamentals of Cavity Preparation," by R. R. Byrnes, Atlanta, Ga.

"The Greatest Need in Dentistry, the Dental Care of Children," by T. B. McCrum, Kansas City, Mo.

WEDNESDAY MORNING

9.00 a.m. to 12.00 m.

(Plankington Hall, Auditorium)

"An Amplified Technic Making Cohesive Gold a Comparative Pastime," by Charles Southwell, Milwaukee, Wis.

"Wax Patterns for Cast Gold Inlays," by Roscoe H. Volland, Iowa City, Iowa.

"The Cast Inlay Restoration," by George M. Hollenback, Los Angeles, Cal.

WEDNESDAY AFTERNOON

2.00 p.m. to 4.00 p.m.

(Arena, Auditorium)

CLINICS:

"An Amplified Technic Making Cohesive Gold a Comparative Pastime," by Charles Southwell and six assistants.

University of Iowa Cast Gold Inlay Clinic:

1. "Cavity Preparation," by Roscoe H. Volland, Iowa City, Iowa.
2. "Investing Wax Pattern," by J. V. Blackman, Iowa City, Iowa.
3. Dissipating Wax Pattern," by G. O. Nicols, Iowa City, Iowa.
4. "Casting Inlays," by Erling Thoen, Iowa City, Iowa.

"The Cast Inlay Restoration," by George M. Hollenback, Los Angeles, Cal.

THURSDAY MORNING

9.00 a.m. to 12.00 m.

"Root-Canal Technic," by J. F. Biddle, Pittsburg, Pa.

"Radiographic Studies of Cases Following Pulp Treatment and Chronic Alveolar Abscesses," by Frank W. Hergert, Seattle, Wash .

THURSDAY AFTERNOON

2.00 p.m. to 4.00 p.m.

(Arena, Auditorium)

CLINICS:

"Root-Canal Technic," by J. F. Biddle and assistants, Pittsburgh, Pa.

"Radiographic Study of Cases Fololwing Pulp Treatment and Chronic Alveolar Abscesses," by Frank W. Hergert, Seattle, Wash.

ORAL SURGERY, EXODONTIA AND ANESTHESIA.

Officers of Section.

John W. Seybold, Chairman, Denver, Colo., 304 Mack Bldg.

Wiliam L. Shearer, Vice-Chairman, Omaha, Neb., City National Bank Bldg.

J. P. Henahan, Secretary, Cleveland, Ohio, 1019 Rose Bldg.

TUESDAY AFTERNOON, AUG. 16.

2.00 p.m. to 4.00 p.m.

(Arena Stage, Auditorium)

"The Surgical Management of Serious Focal Infection Cases When Caution is to be Exercised and When Surgical Procedure is Indicated," by T. A. Hardgrove, Fond du Lac, Wis.

"Tumors of the Jaws. Diagnosis and Treatment," by M. N. Federspiel, Milwaukee, Wis.

WEDNESDAY MORNING.

9.00 a.m. to 12.00 m.

(Arena Stage, Auditorium)

"Differential Diagnosis and Treatment of Syphilis, Tuberculosis and Vincent's Angina," by Edward H. Hatton, Chicago, Ill.

"Principles of Surgery, Modern Methods" (lantern slides), by Bernard F. McGrath, Milwaukee, Wis.

"Clinical and X-Ray Examination of Mouth, Jaws and Antra with a Diagnosis of Findings," by Virgil Loeb, St. Louis, Mo.

WEDNESDAY AFTERNOON

2.00 p.m. to 4.00 p.m.

(Arena Stage, Auditorium)

"The Surgical Anatomy in the Field of Oral Surgery," by D. M. Loughlin, Milwaukee, Wis.

"Cleft Palate and Harelip," by William H. G. Logan, Chicago, Ill.

THURSDAY MORNING

9.00 a.m. to 12.00 m.

Surgical Clinics at Hospitals

(There will be no surgical operations except by local surgeons who have hospital connections).

THURSDAY AFTERNOON

2.00 p.m. to 4.00 p.m.

"Physical Examination and Management of Anesthetic Complications," by F. A. Thompson, Milwaukee, Wis.

"Conductive Anesthesia, Technic, and Management," by C. W. Harned, Des Moines, Iowa.

FRIDAY MORNING

9.00 a.m. to 12.00 m.

Surgical Operations in Hospitals

ORTHODONTIA AND PERIDONTIA.

TUESDAY, AFTERNOON, AUG. 16.

2.00 p.m. to 4.00 p.m.

(Committee Room "A," Auditorium)

Address by Paul R. Stillman, New York, N.Y.

"Dento-Facial Deformities," by B. E. Lischer, St. Louis, Mo.

"A Further Study in Compensatory Treatment for Missing Teeth," by B. Frank Gray, San Francisco, Cal.

"A General-Purpose Orthodontic Appliance," by William J. Brady, Kansas City, Mo.

WEDNESDAY MORNING

9.00 a.m. to 12.00 m.

(Committee Room "A," Auditorium)

"The Making of Diagnosis and Prognosis of Periodontic Lesions," by Elmer S. Best, Minneapolis, Minn.

"Some of the Essentials in the Treatment and Subsequent Care of the Investing Structures of the Teeth Beyond the Preventive Stage," by Elbert J. Weaver, Milwaukee, Wis.

"Altering Abnormal Surface Wear," by F. A. Bricker, Rochester, Minn.

WEDNESDAY AFTERNOON . .

2.00 p.m. to 4.00 p.m.

(Committee Room "A," Auditorium)

"The Field of the Removable Appliance and the Blending of the Removable and Fixed Principles," by Victor Hugo Jackson, New York, N.Y.

"Child Psychology in Orthodontia Practice," by George F. Burke, Detroit, Mich.

"Treatment of Some Extreme Cases of Mal-occlusion and Dento-Facial Deformities After Developmental Period," by A. C. Rohde, Milwaukee, Wis.

THURSDAY MORNING

9.00 a.m. to 12.00 m.

(Committee Room "A," Auditorium)

"The Surgical Treatment of Periodontal Lesions," by Justin D. Towner, Memphis, Tenn.

"Periodontic Response to Irritation," by Newton G. Thomas, Chicago, Ill.

"Use of Special Instrument in Correction of Traumatic Occlusion," by Tom Smith, Langdon, N.D.

MOUTH HYGIENE AND PREVENTIVE DENTISTRY

TUESDAY AFTERNOON, AUG. 16.

2.00 p.m. to 4.00 p.m.

(Juneau Hall, Auditorium)

Lecture for Normal School Students. Illustrated by charts, by G. D. Edgar, Defiance, Ohio.

Lecture Outlines Developed by the First and Second District Dental Societies of New York, by Thaddeus P. Hyatt, New York, N.Y.

"Industrial Dentistry," by Henry L. Banzhaf, Milwaukee, Wis.

(Dr. Banzhaf has an original idea of conducting an industrial dental dispensary).

4.15 p.m.

Industrial Dental Surgeons' Meeting.

This lecture will followed by a meeting of the National Association of Industrial Dental Surgeons in this room. All interested in Industrial Dentistry are invited to be present.

WEDNESDAY MORNING

9.00 a.m. to 12.00 m.

(Juneau Hall, Auditorium)

"Contour Brushing," by Henry Barnes, Cleveland, Ohio.

"A Modern Method of Financing Mouth Hygiene Dispensaries," by Harris R. C. Wilson, Cleveland, Ohio.

"The McDowell County, West Virginia, Pre-School Dental Clinic and

School Dental Clinic as Established and Maintained by the Tax Levy," by G. T. Epling, Welch, W. Va.

THURSDAY MORNING

9.00 a.m. to 12.00 m.

(Juneau Hall, Auditorium)

"Mouth Hygiene Lecture to School Children," by Sidney J. Rauh, Cincinnati, Ohio.

(Dr. Rauh will demonstrate teaching of mouth hygiene).

"Mouth Hygiene Lecture for High School Pupils and Adults" (illustrated by lantern slides) by E. S. Braithwaite, Willard, Ohio.

"Preventive Initial Prepartion of All Mouths," by H. G. Morton, Milwaukee, Wis.

General discussion of all papers.

THURSDAY AFTERNOON AND FRIDAY

(Arena, Auditorium)

CLINICS:

"Contour Brushing," by Henry Barnes, Cleveland, Ohio.

"The Cleveland Mouth Hygiene Dispensaries," by Harris R. C. Wilson, Cleveland, Ohio.

Ten Clinics, by Wallace Seccombe and his associates, Toronto, Canada.

HISTOLOGY, PHYSIOLOGY, PATHOLOGY, BACTERIOLOGY, AND CHEMISTRY

TUESDAY AFTERNOON AUG. 16.

2.00 p.m. to 4.00 p.m.

..(Englemann Hall, Auditorium) ..

Structure and Development of Dental Tissues.

"The Histology of Dentin and the Contents of the Tubuli," by C. B. Bodecker, Berlin.

(a) "A Classification of Oral Manifestations of Systemic Disease According to Type;"

(b) "A Report of the Laboratory Findings of Twenty-Five Cases of Infantile Scurvey, or Barlow's Disease," by Harry Block, St. Louis, Mo.

WEDNESDAY MORNING

9.00 a.m. to 12.00 m.

(Englemann Hall, Auditorium)

Local and Systemic Expressions of Dental Infections.

"Elective Localization of Bacteria Isolated from Infected Teeth," by J. G. Meisser and Boyd S. Gardner, Rochester, Minn.

"Studies of the Vital Processes of Bacteria" —(a) Salt Antagonisms; (b) Surface Tension Influences; (c) Immunizing Properties of Bacteria Grown Under Different Conditions. By W. P. Larson and Thomas B. Hartzell, Minneapolis, Minn.

"Etiology and Pathology of Glomerulo Nephritis," by E. T. Bell and Thomas B. Hartzell, Minneapolis, Minn.

"Researches on Fundamentals Underlying Dental Diagnosis"—(a) Determinations of the Amount of Dental Infection Necessary to Produce Systemic Disturbance; (b) The Effect of Toxine Contained in Infected Teeth in Producing Sensitization of Special Body Tissues to Infections from Those Teeth; (c) Relationships Between Local and Systemic Expressions of Dental Infections. By Weston A. Price, Cleveland, Ohio.

WEDNESDAY AFTERNOON

2.00 p.m. to 4.00 p.m.

(Englemann Hall, Auditorium)

DEMONSTRATION CLINIC:

(a) Exhibit of Specimens, Pictures, and Slides, by Boyd S. Gardner, and John G. Meisser, Rochester, Minn.

(b) Exhibit of Specimens, Pictures and Slides, by Thomas B. Hartzell, W. P. Larson, and E. T. Bell, Mineapolis, Minn.

(c) Motion Pictures Showing Comparison of the Lesions in Patients and Those of Animals Inoculated with Cultures from the Patient's Dental Focal Infections, Also Showing Sensitization Effects, by Weston A. Price, Cleveland, Ohio.

THURSDAY MORNING.

9.00 a.m. to 12.00 m.

(Englemann Hall, Auditorium)

STRUCTURAL CHANGES IN DENTAL TISSUES.

Supporting Structures — "Further Studies of the Effect of Diet upon the Teeth and Jaws," by Percy R. Howe, Boston, Mass.

Enamel and Dentin—"Report of Research upon Saliva," by John A. Marshall, San Francisco, Cal.

"The Etiology of Dental Caries," by F. Bodecker, Berlin.

A MESSAGE FROM CANADIAN DENTISTS IN SZECHUAN PROVINCE, WEST CHINA, TO THEIR COLLEAGUES IN CANADA.

We are a little group of four dentists who have graduated from the Royal College of Dental Surgeons, Toronto, and are devoting our lives to the uplift of the tens of millions in far-off West China. We wish briefly to address ourselves to you in behalf of a project which concerns us all.

Most of you will have heard of the Chengtu Medico-Dental College project started two years ago by one of our doctors when home on furlough. Dr. C. W. Service visited many centres in Canada and met many of you, and also through an illustrated prospectus, entitled "Spend Ten Minutes in China," brought to your attention the salient facts concerning medical and dental conditions in this part of China. Now that Dr. Service has returned to his work, we desire to urge upon you the importance of the project which he advocated.

Our appeal to you has to do directly with the important question of medical and dental education, especially as it concerns us in West China. Such education in China is of strategic importance, for it is the only rational way to attempt to solve the outstanding physical problem of China. Obviously foreign agencies are insufficient to meet the unspeakable need, and we can only adequately assist in the solution of this problem by relating ourselves, our hospitals, dispensaries, etc., to the essential task of raising up a native dental profession strongly based on scientific and Christian foundations. And in doing this we feel that we are making our greatest contribution to the uplift of this great nation.

When we tell you that China's four hundred millions who live in the midst of conditions that beggar description, need 400,000 nurses, 200,000 physicians and surgeons, and 100,000 dentists; that less than one per cent. of her need for doctors is already met; that she has only a few hundred nurses, less than a dozen missionary dentists, and only one Chinese dentist who has graduated from a reputable institution in China, you will appreciate the huge dimensions of the problem which we aim to solve. But we can only hope to do this in so far as we help the Chinese to help themselves. This is our aim, and it is in the facing of this task that we invite your interest and co-operation.

There are only a very few medical schools in China, and only one dental school. The China Medical Missionary Association has fixed on a half dozen strategic centres in which to develop strong medical colleges. One of these centres is Chengtu, capital of Sze Chuan, the largest and most populous province, having a population of 70,000,000. It is in this city that the first attempt at dental education is being made.

In this great city of 500,000 is established the West China Union University, conducted by five co-operating Mission Boards, representing Great Britain, United States and Canada. This University has a constituency of 100,000,000, and is the only institution of the kind in all this vast area. It is both international and inter-denominational in its organization, and is governed by a board of governors in the home lands representing the five Mission Boards. It was founded in 1910, has had a healthy growth, possesses two hundred acres of land, has about forty permanent buildings already erected, and has several faculties of which the medical and the dental are the most recent. These latter are served splendidly by the other departments, such as biology, chemistry, physics, etc., each of which is to have its own separate building.

Only one building is to be erected for the teaching of medicine and dentistry. Hence our college is to be called the Medico-Dental College. It is to provide this building that the members of the three healing professions in Canada, viz., medical, dental and nursing, irrespective of denominational affiliations, are being asked to contribute.

We wish to call attention to what is provided for us in other ways. The other faculties teach all the basic subjects. The site is provided for us on the university campus. There are hundreds of subsidiary mission schools of all grades. There are already erected and in operation in Chengtu three splendid hospitals with accommodation for three hundred patients. There is also a dental hospital. One of the constituent missions is now planning to erect a large modern outpatient department. The staffing, equipment and maintenance of all these institutions is undertaken by the several missionary organizations at great expense. These hospitals, dispensaries, etc., are used for the training of internes, nurses, dental student mechanics, and pharmacists. As these graduate they are sent out to other hospitals to assist and to receive further training.

Our first four medical graduates received diplomas in 1920, while three more expect to finish in June, 1921. The first Chinese in all China to graduate in dentistry will receive his diploma in June. Two pharmacists received diplomas in 1921.

Thus you see we have made a good beginning, although in this educational work we are "carrying on" under great difficulties, chiefly for lack of a suitable building with equipment and also because of insufficient staff. But we are not downhearted. We have given our lives to the healing and salvation of West China, and our lives are about all we have to give. But we appeal to you, our colleagues at home, to lend us a hand in doing something worthy of our noble profession for a magnificent people with a great future—a people that must look to us for leadership and inspiration in all that is ennobling and uplifting.

The people in the home lands are responding generously to the appeal in behalf of the great work of Dr. Grenfell of Labrador. It is a worthy undertaking to meet the needs of our own kith and kin near at hand. But surely your generosity will not stop there. We invite you to share with us in the beneficent ministry to the mute multi-millions in distant West China.

What we ask is that the members of the three healing professions in Canada, together with other friends of the suffering, will speedily raise and present to the Board of Governors of our University the sum of $100,000 to build and equip the Medico-Dental College. To raise this sum will not require a great tax on any of you. What we desire is that thousands of you may have the privilege of co-operating with us in achieving this much desired end. While other buildings are being erected from other sources, we are anxious that this College shall be a distinct contribution to the university from Canada.

A splendid start has already been made, and considerable money has been subscribed or paid to the treasurer of the fund. The first and the very enthusiastic chairman of the promoting committee was the late Dr. R. A. Reeve, once Dean of the Medical Faculty of Toronto University, from whose estate $7,500 has been assigned for this purpose.

As soon as you read these lines, will you not be good enough to send your cheque, large or small, to the treasurer, Dr.

Walter Willmott, 74 Crescent Road, Toronto? A similar statement and appeal is being sent to the physicians and the nurses of Canada. The University Senate has sent to the Board of Governors an urgent appeal for the immediate erection of this building. The need is great, the time is ripe, and the exchange is now excellent.

We respectfully request and urge you to give what we cannot give. If you desire further information, Dr. Lindsay is now on furlough in Canada, and will gladly help as opportunity offers. Prospectuses of this College project may be secured from the Project Secretary, Dr. J. N. E. Brown, 238 Bloor Street West, Toronto.

Signed by: A. W. LINDSAY, J. E. THOMPSON,
H. J. MULLETT, R. M. ANDERSON.

SASKATCHEWAN DENTAL ASSOCIATION.

The following members were present at the Saskatchewan Dental Society meeting: A. Johnson, Moose Jaw; G. Cameron, Swift Current; R. H. Grant, Regina; R. A. Ross, Swift Current; H. E. McKellar, Carlyle; H. Johnson, Moose Jaw; J. E. Foster, Shunavon; H. B. Ness, Cabri; J. A. Plunkett, J. E. Rundle, B. A. Dickson, S. Nakaush, S. A. Merkly, J. D. Foster and H. B. Davies, Moose Jaw; C. H. Weicker, Regina; F. C. Harwood, Moose Jaw; F. W. Mankin, Moose Jaw; R. E. Smale, Regina; Thomas Clermont, Moose Jaw; C. M. Truman, Craik; W. R. Watchley, Yorkton; W. E. Barnes, Assiniboia; F. K. Swizer, Saskatoon; H. W. Lane, Moose Jaw; D. S. Howden, Moose Jaw; E. W. Mounteer, Regina; D. G. Ferguson. Saskatoon; A. Salter, Saskatoon; R. I. Fothem, Strasbourg; C. E. DeWitt, Regina; P. W. Winthrope, Saskatoon; F. E. Skinner, Saskatoon; E. C. Campbell, Saskatoon; A. E. Chegwin, Moose Jaw; S. R. Martin, Moose Jaw; B. C. Walls, Cabri; F. Campbell, Winnipeg; A. J. Brett, Regina; W. F. Smith, Regina; C. W. Turner, Moose Jaw; V. Vondean, Rouleau; F. G. Moore, Balcarres; J. Silknitter, Moose Jaw.

ONTARIO DENTAL ASSOCIATION CONSTITUTION.

By-laws relating, generally, to the transaction of the business and affairs of the Ontario Dental Association.

Be and it is hereby enacted as follows:

ARTICLE I.—SEAL.

The Seal, an impression whereof is stamped on the margin hereof, shall be the Seal of the Association.

ARTICLE II.—MEMBERSHIP.

Section 1.—This Association shall consist of Active and Honorary Members.

Section 2.—Active Members shall be those Licentiates in Ontario who have paid the fee or fees for the current year.

Section 3.—Such scientific and professional persons as the Association may deem advisable may be elected as Honorary Members by unanimous ballot, a list of such names to be kept on record by the Secretary.

Section 4.—On recommendation of the Board of Directors or Governors any member may be expelled for unprofessional conduct, malpractice or immorality, by a two-thirds vote of the members present at any special or general meeting of the Association.

Section 5.—No member may hold any office nor act on any Board or Committee who has not paid the fee or fees for the current year.

ARTICLE III.—OFFICERS.

Section 1.—The Officers of this Association shall consist of an Honorary President, President, Vice-President, Secretary-Treasurer and Archivist, who shall hold office until their successors are elected.

Section 2.—The Board of Governors shall select ten names, from which the President shall select five, who shall act as a nominating Committee to nominate the officers and members of standing committees and report to the Association for election.

Section 3.—No member may hold the same office for more than two successive terms, except the Secretary-Treasurer and Archivist.

Section 4.—The Secretary-Treasurer's duties shall be to keep a correct record of the proceedings of all meetings and sessions of the Association; to conduct all correspondence of the Association; to keep lists of the honorary and active members; to act as Secretary of the Board of Governors; to receive all moneys, and pay the same only on the order of the President of the Board of Governors, and such other duties as the Board of Governors may direct.

Section 5.—Archivist. The Curator of the College Museum, as appointed by the Board of Directors, shall be considered as in nomination for the office of Archivist. The Archivist shall have charge of all the belongings of the Association.

ARTICLE IV.—BOARD OF GOVERNORS.

Section 1.—The Board shall consist of the Officers of the Association, the Chairmen of the Standing Committees, and six others, to be elected as herein provided.

Section 2.—The duties of the Board shall be:

(a) To have charge of the general business of the Association.

(b) To prepare the programme for and have charge of all arrangements for the Annual Meeting or Convention.

(c) To appoint the following Committees in connection with the Annual Convention and to assign their duties: Exhibits, Clinic, Arrangements, Publicity, Registration, Entertainment, and any other the Board may deem advisable. (Members not on the Board may be appointed on a Committee in accordance with Article II., Section 5, but the majority and the Chairman shall be members of the Board).

(d) To appoint the representatives from the Association on the Executive Committee of the Canadian Dental Association.

Section 3.—The Board shall be called together by the Secretary in accordance with Section 5.

Section 4.—(a) At the first Session of each Annual Meeting or Convention two members shall be elected to the Board for a term of three years.

(b) The election shall be by ballot, after nomination.

(c) The election shall be conducted by the Hare-Spence System.

(d) Retiring members shall be eligible for re-election.

Section 5.—The Officers and Board of Governors shall take office when the former incumbents have completed the work of the year, but in no case later than sixty days subsequent to the adjournment of the Annual Meeting of Convention at which they were elected.

Section 6.—Seven shall constitute a quorum.

ARTICLE V.—STANDING COMMITTEES.

Section 1.—The Standing Committees shall be: Oral Hygiene and Advisory.

Section 2.—The Oral Hygiene Committee shall consist of five members, who shall be nominated by the Nominating Committee and elected at the annual meeting or convention, together with a representative from each Local Oral Hygiene Committee. (See Art. II., Sec. 5.) It shall be the duty of this committee to supervise educational work in the province, working in so far as possible through local committees nominated by the local dentists. Such local committees shall report to the Oral Hygiene Committee, as well as to the local society. The five elected members, together with local representatives, appointed by the five elected members, shall constitute the Executive of this Committee. The Executive shall have power to act for the whole committee. Fifty per cent. of the members of this Committee or of the Executive thereof, shall constitute a quorum.

Section 3.—The Advisory Committee shall consist of five members, who shall be nominated by the Nominating Committee and elected at the annual meeting or convention. The duties of this committee shall be to act in an advisory capacity to those practitioners who may be threatened with legal proceedings, and give them all possible assistance (except financial) in connection therewith if deemed advisable.

ARCTICLE VI.—FINANCE.

Section 1.—The annual fee shall be fixed by the Board of Governors and announced in the notice of the annual meeting or convention. It shall not be less than $3.00 nor more than $10.00.

Section 2.—Auditors. The Association shall, at the first session of the annual meeting or convention of the Association, appoint two auditors for the treasurer's accounts, who shall examine and report on the same to the Board of Governors-elect.

ARTICLE VII.—MEETINGS.

Section 1.—The Annual Meeting or Convention of the Association shall be held each year at such place as the Board of Governors may direct and at such place as the Board of Governors may decide upon. If no other time or place is prescribed the Annual Meeting or Convention shall be held at the City of Toronto on the —— day in May in every year.

Section 2.—The Directors or Board of Governors may, whenever they think fit, and they shall, upon requisition made in writing by any ten or more members, convene a general meeting.

Section 3.—The requisition shall express the object of the meeting proposed to be called and shall be left with the Secretary of the Association.

Section 4.—Upon the receipt of such requisition the Directors or Board of Governors shall forthwith convene a general meeting, and, if they do not convene same within twenty-one days of the receipt of the requisition, the requisitionists or any other ten members may themselves convene a meeting.

Section 5.—At least five days' notice of any general meeting, specifying the place, day, and the hour of meeting, and in case of special business, the general nature of such business shall be mailed to each member to his last known post office address, or in such other manner, if any, as may be prescribed by the Association in general meeting, but the non-receipt of such notice by any member shall not invalidate the proceedings at any general meeting.

Section 6.—Eight members shall constitute a quorum.

Section 7.—If within one hour from the time appointed for the meeting, a quorum of members is not present, the meeting, if convened upon the requisition of the members, shall be dissolved. In any other case, it shall stand adjourned to the following day at the same hour and place; and if at such adjourned meeting a quorum of members is not present it shall be adjourned *sine die*.

Section 8.—The Chairman may, with the consent of the meeting, adjourn it from time to time, and from place to place, but no business shall be transacted at any adjourned meeting, other than the business left unfinished at the meeting from which the adjournment took place.

Section 9.—At any general meeting, unless a poll is demanded, a declaration by the Chairman that a resolution has been carried, and an entry to that effect in the minutes of proceedings of the Association shall be sufficient evidence of the fact, without proof of the number or proportion of the votes recorded in favor of or against such resolution.

Section 10.—If a poll is demanded, the same shall be taken in such manner as the Chairman directs, and the result shall be deemed to be the resolution of the corporation in general meeting.

Section 11.—With the consent in writing of a majority of the members, a general meeting may be convened on shorter notice than five days and in any manner which such members think fit.

Section 12.—The presence in person or by proxy of at least ten members shall be necessary to constitute a quorum at general meetings.

Section 13.—Until otherwise determined by special resolution or by-law every member shall have one vote.

Section 14.—Votes may be given either personally or by proxy, and the instrument appointing a proxy shall be in writing under the hand of the appointer and shall be attested by at least one witness, and no person shall be appointed a proxy who is not a member of the Association.

Section 15.—A by-law or resolution signed by all the directors or board of governors shall be as valid and effectual as if it had been passed at a general meeting of the directors duly called and constituted.

ARTICLE VIII.—MANAGEMENT.

Section 1.—The affairs of the Association shall be managed by the directors or board of governors, who may exercise all such powers of the Association as are not by the Ontario Companies Act or by Letters Patent or by these or subsequent by-laws, rules or regulations required to be exercised by the Association in general meeting.

Section 2.—The continuing directors or board of governors may act notwithstanding any vacancy in their body.

Section 3.—The Association may, from time to time, in general meeting increase or reduce the number of officers, board of governors and committees, and may also determine in what rotation any such increased or reduced number is to go out of office.

Section 4.—Any casual vacancy occurring in the board of officers or governors or committees may be filled by the directors, but any person so chosen shall retain his office so long only as the vacating officer, governor or committeeman would have retained the same if no vacancy would have occurred.

Section 5.—The Association, in general meeting, by resolution, of which notice has been given in the notice calling the meeting, may remove any officer, governor or committeeman before the expiration of his period of office, and may, by resolution, appoint another person in his stead; the person so appointed shall hold office during such time as the officer, governor or committeeman, in whose place he was appointed would have held the same if he had not been removed.

Section 6.—(1) The board of governors or committees may meet for the despatch of business, adjourn, and otherwise regulate their meetings as they think fit, and determine the quorum necessary for the transaction of business.

(2) Questions arising at any meeting shall be decided by a majority of votes. In case of an equality of votes the chairman shall have a second or casting vote.

(3) A director may at any time summon a meeting of the directors, or a committeeman a meeting of the committee.

Section 7.—The board of governors, by resolution entered upon the minutes, may delegate any of their powers to committees consisting of such member or members of their body as they think fit, and a committee so formed shall, in the exercise of its powers so delegated, conform to any regulations that may be imposed on them by the board of governors.

ARTICLE IX.—CHANGES.

Section 1.—These by-laws or regulations may be repealed, amended or altered at any meeting of the Association, duly called for considering the same by a two-thirds vote of the members present at such meeting.

Editorial

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EXERCISE AND RECREATION FOR DENTISTS.

Dentists often receive advice in general terms on taking exercise, and even some times on recreation. Some writers would have dentists chop wood, attend the furnace, dig the garden, walk four miles a day; others would have them play baseball, tennis, golf, basketball, or even poker for both exercise and recreation. Without going into the philosophy of the subject, it is clear that the form of diversion from dental practice, must, in a measure, be governed by the surrounding circumstances and the physical and mental viewpoint of the person.

Muscles soon get out of tone and have a baneful influence on the function of the body without normal exercise. The higher or more specialized functions of the mind get out of order more slowly and return to normal more slowly. Exercise keeps not only the physical functions normal but indirectly the mental.

A busy dentist then requires daily exercise of a character different from that obtained in his practice, and also a mental exercise different from that found in his office. Experience has taught dentists that even these diversions are not sufficient to maintain normal bodily and mental health, but there must be every now and then a complete separation from the regular routine of exercise, physical and mental. It does not serve the purposes of recreation to take a day off now and again, there must be a complete separation from the scenes and thoughts and associations of the routines of life to get recreation, and as years advance, recreation comes more slowly until finally not at all.

No young dentist intends to allow himself to come to the point of a physical or mental breakdown, but unfortunately it too often happens that practice increases and responsibilities increase until he finds himself working longer hours than he should. It takes courage to say to a patient who has honored him with a consultation, "You will have to come at a more convenient season, I must have a holiday."

The selection of the form of exercise and recreation must be studied out by each person for himself, having in mind some general principles as to physique, age, mental bias, and the fact that he is a dentist. No person can do fine finger manipulations following violent labors or exercises. Vigorous exercises should not be taken in the morning. Dentists cannot afford to play such games as endanger their hands or eyes. Finally, study the problem of exercise and recreation as it applies to you, and allow no amateur to dictate the kind of sport or exercise, physical or mental, to follow.

MORE REGULATIONS FOR DENTISTS.

The Department of Health some weeks ago mailed to all physicians, veterinary surgeons, dentists and druggists in Canada, Form No. 6, on which to make the declaration as provided under the Act showing that they are engaged in the sale or distribution of narcotics.

Very heavy penalties are provided under the Act for neglecting or refusing to furnish the declaration in question; a fine of not less than $200.00 and costs, and not more than $1000.00 and costs, or a term of imprisonment for one year, or both fine and imprisonment, being the penalties specified for non-compliance with the regulations.

As a number of physicians, veterinary surgeons, dentists and druggists have not so far sent in the required declaration, the Department has advised the Editor that unless this declaration is received within a reasonable period, the law will be enforced and penalties levied upon all delinquents.

It should be noted that all physicians who obtain narcotics in any quantity to administer directly to their patients, are considered to be engaged in the distribution of these drugs; likewise all dentists and veterinary surgeons who obtain supplies of these drugs for use in connection with their practice, are considered to be engaged in the distribution of narcotics, and it is, therefore, necessary for them to make the declaration as required under the Act as amended at the last session of Parliament.

Any physician, veterinary surgeon, dentist or druggist who may have mislaid the forms sent by the Department, may, upon application to the Department of Health at Ottawa, obtain further copies in order that the necessary declaration may be filed.

The Department of Health does not wish to work any hardship in connection with the filing of these declarations, but in order that the law as embodied in the Act, be conformed with, any physician, veterinary surgeon, dentist or druggist failing to fill in the forms of declaration within a reasonable time, will be dealt with according to the terms set forth in the Act.

DENTAL EDUCATION IN GREAT BRITAIN.

The following notice has been sent out by the General Medical Board in respect to dental education in Great Britain:

"On on after 1st January, 1923, the following regulations will be in force:—

"1. Before registration as a student every candidate shall produce evidence that he has attained the age of seventeen years.

"2. That the minimum standard of general education required will be that of University Matriculation or entrance examination in Arts or Pure Science.

"3. Before registration as a student every applicant shall be required to have passed an approved Examination in General Education, and, in addition thereto, an Examination in Elementary Physics and Elementary Chemistry conducted or recognized by one of the Licensing Bodies.

"4. A student who has diligently attended an approved course of instruction in Elementary Biology at a Secondary School or other teaching institution recognized by a Licensing Body may be admitted to the Professional Examination in Elementary Biology immediately after his registration as a student."

DENTAL SOCIETIES.

SASKATCHEWAN DENTAL SOCIETY.

The Saskatchewan Dental Society held its fourth annual convention in Moose Jaw, May 30-31, June 1st. Dr. F. E. Roach, of Chicago, conducted a post graduate course on Partial Denture Prosthesis. The course was very practical, Dr. Roach going into details of construction with lectures, charts, table clinics, and practical demonstrations. One practical case was carried through to completion by Dr. Roach. The three days spent with Dr. Roach were surely days of both profit and pleasure.

At the business meeting some matters were discussed which might be of interest to the profession in general throughout the Dominion. The following recommendation was brought forward and passed, and it was moved that a copy of the same be forwarded to the provinces which might be affected.

"That the Saskatchewan Dental Society recommend to the Dominion Dental Council that their constitution be so amended that provision be made that all those who are holders of valid and unforfeited certificates of license to practice dentistry in any of the Provinces entering into the agreement, and who have been in regular legal ethical practice of dentistry in any of the said Provinces for ten years prior to the date of application, be granted a D.D.C. certificate on producing evidence of good moral character and payment of a fee not exceeding the sum of $100.00."

The Resolution Committee placed before the Convention two important resolutions:

1. "That we give the Oral Prophylactic Association greater support in doing all we can to boost the products put on the market by them, namely:—Hutax dentifrice, brushes and mouth wash, as the money derived from their sale is spent in educational advertising in dentistry."

2. "That the Saskatchewan Dental Society pledge itself to assist in establishing a Memorial Fund and Foundation for dental research within the Dominion of Canada."

In connection with the latter resolution, Dr. S. Moyer passed a subscription list among the members of our Society, which met with hearty approval and response.

Executive for 1922 are President, Dr. A. P. Salter, Saskatoon; Vice-President, Dr. C. W. Parker, Regina; Secy.-Treas., Dr. E. C. Campbell, Saskatoon.

REPORT OF THE ORAL HYGIENE COMMITTEE OF ONTARIO DENTAL ASSOCIATION.

Members of the Ontario Dental Society:

Your Oral Hygiene Committee submits the following report of their season's work for your consideration.

Liberal plans were outlined by your committee to supply Educational Literature for the Department of Education to publish, looking to the carrying on of the work shown to be necessary by the Provincial Surveys.

Arrangements were made and carried out for talks on Preventive Dentistry to the Teachers' Institutes (some 70 in all).

The question of the formation of Home and School Clubs in the larger centres to co-operate in the work of better health, has been discussed at some length. The plan was to have the women take hold of this work and be an auxiliary to the staff of teachers in the various schools.

We would suggest that you, as members of the profession, seriously consider this proposition and communicate your suggestions on the matter to the Secretary of the Oral Hygiene Committee of this Society during the coming season.

The main business that has engaged the attention of your committee is the follow-up work of the voluntary survey that was made throughout the Province.

The matter was taken up with the Hon. Mr. Grant, Minister of Education. Our first proposition was to ask for a grant of $10,000 to carry on this work if the department did not see its way clear to go ahead with the survey.

The Minister promised to appoint a Provincial Dental Officer, and Dr. Conboy was employed one day a week to direct the work throughout the province. Dr. Conboy found the time wholly inadequate to cope with the work and gave up much of his own time gratuitously to meet the needs.

The Minister was again interviewed on various occasions with a view to making Dr. Conboy a full time officer at $5000 per annum. Finally an appropriation of $4000 per annum was provided for a Dental Officer on full time, but Dr. Conboy could not be induced to carry on at that salary and give up his practice. The appropriation still stands but the office is as yet unfilled much to our regret.

Your committee is strongly of the opinion that the profession would be well served could arrangements be made to have Dr. Conboy fill this important office, and would suggest that this Association make a grant to its Oral Hygiene Committee of $1000, to be used to supplement the Government's appropriation of $4,000 per annum providing Dr. Conboy's services can be secured.

A series of five articles of a popular character have been prepared by Drs. Trotter, Ellis and Husband, and published by the Canadian Newspaper Union Publications representing a circulation all over the province of 50,000. These have been prepared in pamphlet form and a copy will be placed in the hands of every dentist in Ontario. It is hoped that they will serve as a basis for public education both in your offices, in your local press, in lectures to various local organizations, etc. The articles have received favorable comment by the Toronto Board of Health, and we commend them to you.

A sub-committee is at present preparing lantern slides and skeleton lectures for use of the dentists who desire to give lectures to the public, and these may be obtained by communicating with the Secretary of the Ontario Oral Hygiene Committee.

F. C. Husband, Secretary.

REPORT OF ADVISORY COMMITTEE OF THE ONTARIO DENTAL ASSOCIATION.

The Advisory Committee on alleged malpractice cases begs to report an increasing number of claims for malpractice against members of the profession being brought to its attention. Owing to the confidential nature of its work the committee is unable to give details of these cases, but it is able to report that the majority of such cases were finally withdrawn by the applicant. Others were settled in such a manner as to properly safeguard the best interests of the profession, and the practitioner more vitally concerned. Those that were finally allowed to be taken to the court were all decided in favor of the practitioner.

The committee for the past year was composed of Harold Clarke Wallace Seccombe, A. D. A. Mason, C. E. Pearson, and R. G. McLaughlin.

Respectfully submitted,

R. G. McLaughlin, Chairman.

THE DENTAL NURSES' ALUMNAE ASSOCIATION HOLD ANNUAL MEETING.

The first annual meeting of the Dental Nurses' Alumnae Association of Canada was held on May 10, 1921, at the Royal College of Dental Surgeons. Dental nurses from the classes of 1920 and 1921 were present.

The President, Miss Bartindale, opened the meeting with a few words of welcome to the class of 1921. The constitution was read, approved and adopted.

Mrs. J. B. Wilmott was elected Honorary President of the Association. The other officers elected were: Miss Pearl Bartindale, President; Miss Jean Martin, Vice-President, and Miss Geraldine Lewis, Secretary-Treasurer. Drs. A. E. Webster, W. E. Wilmott and I. H. Ante were chosen to act on the Advisory Council. Two members from each class were appointed to be on the Executive Committee, namely, Miss G. Whitehead and Miss T. Burley from the class of 1920, and Miss B. Willis and Miss E. Sharpe from 1921. Other committees formed were the Arrangement, Program, Entertainment and Publicity Committees.

The members have every hope that this Association will, in the near future, not only be of great benefit to the profession of dental nursing, but also the profession of dentistry at large.

DENTAL CAR FOR SASKATCHEWAN.

The purchase of two automobiles to be equipped as dental offices to look after the dental requirements of children in the back settlements of the province, was decided upon at a meeting of the Provincial Executive of the Red Cross Society held in Regina.

The cars will be supplied with portable equipment and a dentist will be provided for each. One is to operate in the northern part of the province with Saskatoon as headquarters and the other in the south with Regina as headquarters.

These cars will go out into the settlements remote from railway facilities and where dental care is practically inaccessible. They will visit the rural schoolhouses and give treatment to children requiring this assistance, where the sanction of the parents is first secured. Advance notices of the dates of arrival of the cars at various points will be sent out. Where parents are able to pay this service they will be asked to contribute towards the cost, but where they are unable to do so, the treatment will be furnished at the Red Cross Society's expense.

Surveys and statistics have shown that 95 per cent. of the school children are suffering from defective teeth, bringing in its train diseased tonsils and other ailments, and this is sufficient demonstration of the necessity for this service," said Commissioner W. F. Kerr.

A CASE FROM PRACTICE.

Miss C., a lady of about 35, visited the office to ask advice about a swelling in the floor of the mouth. Reporting that she had visited her medical man several times and he had cauterized the swelling, but without any good results. On examination I found a swelling about the size of a hazel nut to the right of the lingual fraenum, and in passing a probe to the opening of the lingual duct, which was also slightly swollen, a hard rough surface was detected. After using a local anaesthetic, I opened the swelling and removed a piece of calculus about the size of an ordinary pea. A mouth wash was then given, and in a week the patient reported all well and comfortable. Before the operation, on eating anything that excited a flow of saliva, the sublingual glands became enlarged and painful owing to the obstruction, and took some time to become normal again. This condition had existed for some months before the case came to my notice, and had caused much annoyance both physically and mentally.

SCHOOL DENTISTRY AT P.-T. MEETING.

Dr. Pond, school dentist, and Mrs. Arthur Hodgson, vice-president of the Music Teachers' Association, were the speakers at a meeting of the Charles Dickens Parent-Teacher Association held on Wednesday afternoon in the school with the president, Mrs. Marion Russell, in the chair.

The trials and tribulations of a school dentist were clearly explained by Dr. Pond to the members, the most important of these being, he said, the tremendous amount of opposition from the parents. They don't co-operate as they should, he said, and a great many of them are opposed to the dental cards which are from time to time taken home by the children. While some of the examination cards may seem ridiculous to the parents, the doctor said, they do not seem ridiculous to the doctors as they must have the required information.

The efficiency of the medical department is greatly handicapped by the defeat of the school by-laws, the speaker said, and he read an extract from a report of the Toronto dental department showing the advanced plans in that city.

The music credit in the schools was clearly outlined by Mrs. A. Hodgson, following which many questions were asked her by parents and teachers regarding the practical side of the system, all of which were graciously and convincingly answered by Mrs. Hodgson. The meeting went on record as opposed to music credits in the schools.

A report was given by Mrs. Whitney on the last federation meeting, and it was announced that the sum of $61 had been realized from a dance held on April 7.

The principal of the school played a most enjoyable piano solo and a reading was given by Miss Nellie Morris.

The sum of $5 was voted towards the fund in aid of the piano at the School for the Blind.

WHERE TORONTO LEADS.

Dr. E. Brooke Nicholls, a Melbourne dentist, in recording some notes of his recent visit to Europe and America, points out that the Royal College of Dental Surgeons of Toronto, Canada, is the largest dental school in the world with nearly 900 students, as against some 600 at the dental school of the University of Pennsylvania. He adds: "In matters pertaining to public dental education, Toronto ranks very high. There is, roughly, one dentist for every 1,000 people in the city of Toronto, and in this respect it leads the world. In the United States there is one dentist to every 3,000 of the population. Australia and New Zealand show a similar ratio, but in England the number of registered men is so few in comparison with those of Canada and the States, that the average works out at 1 per 10,000 persons, and yet the dental schools of London are fine institutions and well equipped."

NOTES.

From the reports it would appear that the dentists of Edmonton had a holiday for sports June 7th, 1921.

The Great War Veterans' Association have asked that a supervisor of dental services be selected for the schools of Ontario from among the soldiers who saw overseas service.

Among the candidates who took the June Dominion Council examinations at Halifax, were M. A. Clay, A. T. Turnbull, J. H. Lawley, Carl Dexter.

The annual Outing and Recreation Club of No. 5 District of Ontario, held its day at Simcoe, June 16th, 1921. The attendance was unusually good. Toronto, London, Kitchener, Woodstock, Brantford, St. Thomas, being largely represented, besides members from the nearer places. There were golfing, bowling, tennis, music, speeches and strawberries. The guests were received and made welcome by the President, Dr. W. M. McGuire and Mrs. McGuire, assisted by a local committee. Dr. L. A. Koeppel, Kitchener, is the efficient Secretary.

Dr. A. P. Salter, Moose Jaw, was elected President of the Saskatchewan Dental Society for 1921-22.

The Temple Pattison Company have donated a cup to the Saskatchewan Dental Society, to be played for annually.

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Dominion
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Original Communications

HYPERSENSITIVE DENTINE AND METHODS OF TREATMENT.

J. Carl McLister, D.D.S., L.D.S., Toronto

(Read before Ontario Dental Association, Toronto, June, 1921)

History tells us that among the ancient peoples, when Hipprocrates and Galem pursued the practice of medicine and dentistry, fortitude was a mark of great strength and character. Then men and women were educated from childhood to withstand great pain and discomfort. In those days, then, treatment for the relief of pain was not necessary. But the discovery of anaesthesia by a dentist, Horace Wells, coupled with the more humanitarian tendencies of the years, has changed all this, and to-day the civilized races of the world cannot stand the pain have done much to alleviate the suffering attendant upon the cutting of dentine, but it has also increased the amount of cutting necessary. Cavity preparation, as it is understood to-day, involves much instrumentation to secure proper flat seats, parallel walls, convenience and retention form, and immunity to decay.

The sensitiveness of dentine in the preparation of cavities varies considerably and many different ideas have been expressed by different authorities in the attempt to define just what is non-sensitive. sensitiveness and hypersensitive dentine. Barrett holds that in normal dentine there is no pain and the source of sensitiveness is from continued irritation, whence develops a responsiveness of the nerves of the pulp, which is transmitted to the dentine. Bouchard-Inglis states that all vital dentine is sensitive and this sensitiveness differs in different individuals. Hypersensitiveness is developed during pathological changes of the tissues. G. V. Black says that thermal sensitiveness is normal, although no other tissue or organ shows a like sensitiveness.

Hypersensitiveness develops under certain conditions and caries is one of them. Therefore, nearly all carious teeth are hypersensitive. Davis describes hypersensitive dentine as that which is more than normally responsive to mechanical or chemical irritation. He says normal dentine is only slightly sensitive but may become excruciatingly hypersensitive, due to abnormal conditions or irritating agents. Now, some of the questions we might ask ourselves are: What is "normal" sensitiveness? How sensitive should a normal tooth be? Are any teeth, upon which we are called to work, normal? How do we know that even a sound tooth into which we may have to cut, is normal? Is sensitiveness of dentine a sign that it is healthy or unhealthy?

This we do know, however; we have to contend with hypersensitive dentine. Whether the pain is due to sensory nerve filaments in the dentinal tubules or whether the sensations are carried to the nerves of the pulp through the protoplasmic contents of these tubules, may still be a question. We also know that pain incident to cutting dentine is greatest at the enamel---and cemento-dentine junction and also at the junction of the enamel, cementum and dentine, and that here we find the greatest number of branching dentinal fibrillae. Sensitiveness of dentine also varies with the kind of caries present. With the white or yellow variety we may have extreme sensitiveness and with the brown or black very little and sometimes none.

While the hypersensitiveness of the dentine is due, in most cases, directly to caries, it is also induced to a marked degree by abrasion. attrition, and erosion and these cases are particularly hard to deal with. Recession of the gum tissues and the resultant exposure of the cementum is another frequent cause. The pressure of abnormal secretions in the mouth, as during the convalescent stages of fevers, in diseases such as dyspepsia, neuralgia, pulmonary tuberculosis, and acute rheumatism, and during pregnancy and lactation, also produces a tendency to abnormal sensitiveness. And likewise newly erupted teeth, the teeth of the growing child, and those with poorly calcified dentine. People leading sedentary lives, those under heavy mental strain and those working under conditions that lead to anaemia and debility, are types that are prone to this hypersensitiveness of the dentine.

It is evident, then, that in dealing with this condition, we must suit our treatment to the patient. Before considering the many different methods that have been used from time to time and in use to-day, let us first mention the handling of the different types of patients. The classification of one's patients into well-marked divisions, such as nervous, sanguine, bilious, etc., and the pigeonholing of the same for future reference, is of course, quite impossible. The distinguishing of the truly nervous and highly strung patient from the cowardly, the childishly irresponsible or the patient who pretends he is suffering, *is* highly essential, however, in the successful carrying out of operations upon hypersensitive dentine. The first class of patients demand careful consideration and the use of all deftness and skill, both in mechanical procedure and in the means used to obtund the dentine. Cowardly patient must be dealt with in a reasoning manner, sternly at times. Our best endeavors may only result in temporary measures against further destruction of tissue. Irresponsible characters demand a coaxing, amusing and sometimes a stern manner. Children are good examples of this type and many adults must be handled in the same way. The pretender, the one who thinks he is being hurt when he isn't, is maybe the most aggravating. He wishes to warn you before he is hurt and may grab your hand, etc. The best means to adopt in these cases is to make sure first that the patient is fooling you, and then stop immediately and refuse to do another thing until he has made up his mind to control himself. In all cases, a warning that pain is coming a word of encouragement here and a word of praise there, coupled with absolute confidence and skill on the part of the operator, will do much to facilitate matters.

Methods to overcome hypersensitive dentine have been in use for a great number of years back. No universal method has yet been found; in fact it were better that no universal method was ever put in the hands of the profession as a whole. For any such method would enable those with little knowledge of the anatomy and physiology of the tooth to cut even closer to the pulp than they do to-day, and we would have more dead and dying pulp than ever. Like the handling of different patients, the different methods must be used where they are indicated. They may be divided roughly into Physical Agents; Local Analgesics; General Anodynes or Analgesics; and Mechanical Procedures.

Heat may be applied to the tooth, isolated with the rubber dam, by means of the hot air syringe which is now a part of every dental unit. Compressed air and electricity must be available and the air is heated as it passes through the syringe. In conjunction with a dehydrating agent such as alcohol or phenol compound, a desiccation is produced that is very valuable as an obtundant.

Cold air may be applied in the same way with a syringe or we may use a spray of ether, ethyl chloride, etc. The tooth must always be isolated with the rubber dam. A handpiece can be purchased from the supply depots, having an attachment thereto for the continuous blowing of cold air into the cavity, while the burr is rotating. This lessens the heat of drilling,.keeps the cavity dry and gives a clear view, free from chips.

Light has been used in different ways, but, so far has proven of little or no value as an obtundant.

Electricity at one time was used extensively through the method of cataphoresis.It was a slow method of doubtful value and required expensive equipment. It is not used to-day.

Here, we might mention hypnotism. It is undoubtedly used by some with a great degree of success. It certainly cannot be used by all, but those who have this peculiar power find it very useful in conjunction with the more ordinary methods to induce an insensibility to pain.

The consideration of the second class of remedies, Escharotics, and Caustics, brings us to the handling of drugs and their compounding, etc. We must know the pharmacologic action and the therapeutic application of the drugs we use and just exactly what to expect from their application. And likewise, we should possess a perfect knowledge of the anatomy and histology of the tooth, the pathology of the dentine, the fibrillae and the pulp and the changes that these structures undergo due to irritation. Possessing this knowledge, then, we proceed.

Escharotics and Caustics cauterize the dentinal fibrillae, destroying the medium through which the pain impulses are transmitted to the pulp. Great care must be used in order that the pulp itself is not involved. Arsenic trioxide, for instance was discovered by Dr. Spooner, of Montreal, to be a wonderful dentine obtundant. Unfortunately, its action wasn't limited to the dentine and the death of pulps followed its application. Those that may be used with a degree of safety may be mentioned as phenol, zinc chloride, trichloracetic acid, silver nitrate, and trioxymethylen. Of these, phenol is the most valuable and is mentioned again under a more important group of obtundants. Silver nitrate has proven itself valuable as a preventative to decay. In the anterior part of the mouth it cannot be used on account of its tendency to discolor the tooth tissue. ''Silvol,'' a preparation of silver nitrate placed on the market by Parke Davis Co., may be used instead. Silvol does not stain nor irritate as does silver nitrate.

The Local Anodynes or Local Analgesics are the most useful and important class of drugs at our disposal. They include cocaine, novocaine, neothesin, menthol, oil of cloves, eugenal, phenol, ethyl chloride, ether, chloroform.

Cocaine is used in the form of the alkaloid or the salt, cocaine hydrochloride. It has been used, and is still used by some, in 1 to 1.5% aqueous solution for high pressure anaesthesia for obtunding of dentine. Its best use to-day, however, exists in its use in the oleate of cocaine (N.F.) which is smeared over the sensitive dentine to be excavated and sealed in with cement for two or three days. A mixture of cocaine, chloroform and ether placed in cavity and evaporated to dryness has also proven to be valuable.

Novocaine, otherwise known as procaine, novol, etc., has now almost superceded cocaine in every method of its application. Its action is slower. Its best use lies in its injection by infiltration, intravenous or conductive methods. Novocaine and conductive anaesthesia or nerve blocking is hailed by some as being the coming method that shall be used in all operations to promote painless dentistry.

Menthol has been found very good mixed with chloral and sealed in cavity for a few days.

Oil of cloves placed in dryed cavity on pledget of cotton and evaporated to dryness, and repeated as often as necessary, is also very good.

Phenol may be used same as oil of cloves or it may be sealed in cavity for few weeks. Phenol Compound is excellent for sealing in cavities in this way. Phenol Compound consists of menthol 20 gr., camphor 40 gr., phenol (U.S.P.) 3 fluid drams.

Ether, ethyl chloride, and chloroform are used to produce cold by virtue of their volatility.

General Anodynes and Analgesics include the Bromides, Opium, Nitrous Oxide and chloroform. The bromides are of particular value in dealing with patients who are very nervous from fear or dread of the dental chair. For such patients a prescription consisting of Bromide of Potassium 1½ drams, sarsaparilla syrup compound 3 fluid ounces may be made up. A tablespoonful taken in water after meals the day before coming to the office will quiet the nerves and help considerably in the handling of the patient.

Opium can be used but it were better not used for such a thing as sensitive dentine.

Nitrous oxide, in combination with oxygen, can be made a very valuable aid in certain cases, as the analgesic stage can be prolonged and presents very little danger. With the apparatus in use to-day for administration through the nose, the mouth is left clear for operating.

Chloroform may also be used in same manner as nitrous oxide and, by some, very good results are obtained and with little danger to the patient. The use of chloroform, however, with its attendant dangers in any but experienced hands, is not advocated, especially when we have such an excellent substitute as nitrous oxide and oxygen.

A treatise on the subject of hypersensitive dentine would hardly be complete without mention of Buckley's Desensitizing Paste. Although it has been called also Buckley's Pulp Dentilizer, in the hands of one experienced in the use of obtundants of this nature, it gives excellent results. Buckley informs us that his paste consists of neathesin 11 parts, thymol 12 parts, and trioxymethylene 77 parts, in a petroleum base with a fibrous vehicle and colored by an insoluble pigment. The neathesin is said to act on the exposed dentinal fibrillae, paralyzing them; the thymol volatilizes into the softened dentine; and the trioxymethylene liberates formaldehyde by the action of the heat of the body and sterilizes. Application must be in very small amount, carefully spread over the sensitive dentine and sealed hermetically with cement. It may be left 24 to 48 hours or longer. Care must be taken in cavities near pulp. Buckley says, that toothache following the use of his remedy must not be confused with the pathologic ache following the insertions of fillings too near the pulp and that any ache following the use of the paste will quickly pass away.

Here, it might be well to mention also a remedy used by Dr. Harold Clark, of Toronto, for over twenty-five years with perfect success. It has been dubbed "Clark's Paste." It has been named by him Oxythymol of Zinc. To 1 oz. of Zinc Oxide add 1 gr. of Chrome Yellow and 2 grs. of Red Sienna or Lampblack. Make up two solutions as follows, "A" and "B". Solution "A" is a saturated solution of zinc sulphate in water. Solution "B" is one of 12 grs. of Boracic Acid to 1 oz. water. A working solution is made up of 3 parts "A" plus 1 part "B" ("B" is the retarder and is used accordingly). Add crushed Thymol crystals to this working solution (to each dram of the solution add thymol that will cover a five cent piece). Mix with Zinc Oxide mixture to make a cement. Place in cavity and leave a few days or weeks and the sensitiveness will have abated at next sitting.

Robinson's Remedy may also be used to seal in cavity. It consists of Potassium hydrozide and phenol crystals equal parts, rubbed together in a mortar till a paste is formed. This must not be used too near pulp.

In closing, we may say that sharp burrs and instruments, a steady hand, a keen eye and a time-runing engine, coupled with a proper knowledge of dentistry and a certain amount of common sense and human instinct, will go far to alleviate the pain in the cutting of hypersensitive dentine.

UNDER WHAT CIRCUMSTANCES SHOULD PULPLESS TEETH BE EXTRACTED?

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We are all safe in saying that within the past five or six years, this subject has been more discussed among dentists than any other subject pertaining to the profession. It has taken up much space in Medical Literature, and has been handled from so many angles that it has produced confusion in the minds of medical men and dentists.

It has caused a great diversity of opinion, and it is only now that an attitude of sanity seems to be approaching in its consideration.

The good it has done cannot be questioned in the elimination of teeth that in past time would have remained in the mouth.

However, this has been counterbalanced by the needless extraction of thousands of pulpless teeth which were harmless to the patient.

The effect of this agitation about pulpless teeth has had a peculiar psychological effect upon the people. Many an individual who has in his mouth pulpless teeth which have been giving him good service, suddenly discovers, after reading all the public prints about the evils which come from these organs, that he has aches and pains somewhere in his mouth that he has never had before. That is the tendency of human nature and that is why we fall for the patent medicine man. who has made a fortune out of the gullible public.

To get down to hard facts, we want to know what we are going to do with the fifteen per cent. of the teeth that become devitalized through caries, or possibly some other cause. To claim that all pulpless teeth are a menace to health is to run counter to the experience of more than half a century of close clinical observation. If we have to extract teeth, then dentistry is a failure. However, this statement is not true. To save the life or health of a patient, a physician would not hesitate to cut off a hand or a foot, and the operation would be counted a success, if he restored the patient to health. I think the Dental Profession is beginning to realize the value of its service to the health of the whole body rather than the saving of one or more teeth within that body.

We have one class of physicians and dentists who claim that no devitalized tooth should ever be harboured in the mouth, and another class who say that by careful sterilization and operation, little if any systemic trouble can arise, since the focus of infection is walled off by nature. They say that a pulpless tooth that has become infected has a bacteria of low virulence, and unless the resistance of the body is weak, there is little danger.

Those who advocate the extraction of all pulpless teeth have good reason for believing so. Nature has supplied every tooth with nerves, blood vessels and lymphatics. When these are removed, the tooth becomes susceptible to attack from without and within. We find a great many health restorations after the removal of pulpless teeth. Hence we cannot deny that a large percentage of these symptons are due to such teeth.

Another thing we must consider is that pulpless teeth do not bring on a sudden systemic trouble, but a slow process, and we wait too long until the patient has lost his health. Secondary infection may result. Say rheumatism sets in, and patient may be deformed for life. By pulling all his teeth you cannot then effect a cure. Surely, then, the health of the patient is worth more than two or three pulpless teeth.

Dr. Talbot says he has cured arthritis deformous, headaches, indigestion, boils, large glands in neck, and skin eruptions by removing pulpless teeth, and a number did not show any defects in the X-Ray. It is doubtful that in treatment through a root-canal we can sterilize the affected area and prevent areas from becoming re-infected. Then the safety first method is to remove them.

The increase of systemic troubles among persons having pulpless teeth as compared with those not having pulpless teeth is too large to be considered unrelated. In an Insurance Co's. Clinic two thousand cases showed 118% increase of neuralgia and neuritis as compared with those who did not have pulpless teeth; an increase of 164% nervous trouble; of 87% furuncles; 75% of skin troubles.

Then we have the diametrically opposite view point taken by men of our own profession that pulpless teeth should be retained even if they have radiolucent areas, at end of the root, providing they will respond to treatment.

Shall we, because a tooth is pulpless, tell the patient it must come out? Man has been given only 32 teeth and when one or more of these teeth are lost we have trouble right away, which usually results in unhealthy tooth and gum condition. The teeth start to shift, gums are irritated and more decay and pyorrhea is started. No artificial appliance, however closely approaching perfection, has ever been made to replace missing teeth which is not an irritant to dental or peridental tissue.

A devitilized tooth, that should be retained in the mouth if possible, should be given a close examination, such as Local Pathology, probable systemic effect, general physical condition of the patient; position of the tooth in the mouth; the patient's age and occupation; number and outline of the roots, prospect of restoration value as an abutment, and occlusal function.

There are cases in which we should not hesitate as to extraction of these teeth. Pulpless teeth which perform no important function, or which can be artificially restored without mutilation of the other sound teeth should be extracted. Take a patient suffering from rheumatism or having a tendency of catching cold easily, we should not add the additional load of possible dental infection by retaining these pulpless teeth. Then we have the patient with abnormal blood pressure. Focal infections so often affect the blood pressure. Any pulpless teeth should be removed. Ninety per cent of the patients with closed streptoccal foci show an abnormally low blood pressure, low homoglobin and lacking in red and white cells. The other 10 per cent vary from normal to alarmingly high blood pressure.

Pulpless teeth with radiolucent areas are infected, but no one could say that they always are infected or that they will be infected sooner or later. We have rarified areas at the ends of vital teeth, and infection also in teeth affected with Gingivitis and Pyorrhea; therefore if we wish to be entirely free from infection we must extract all these teeth, and we would have very few left. I am afraid some poor patients would have pullman teeth, one upper and one lower.

It has been shown by the use of the X-Ray, that some vital teeth display distinct apical radiolucent areas and some teeth with non-vital pulps show no areas.

When we find rarified areas, at the ends of pulpless teeth we must consider whether they are healing, are inactive or are becoming worse. Dr. Peters of Boston shows radiograms of pulpless teeth with very large areas, in the process of healing, and later the area has entirely disappeared. Others show small areas, and later radiograms showing these areas much enlarged. Dr. Crane, of Washington, found these areas after their disappearance to be commonly sterile. Dr. Brooks, of Boston found commonly used root canal dressing did not sterilize infected dentine, but that Howes Silver reduction method was 90% efficient.

Dr. Prinz has shown that infected apical areas may be eradicated by use of Dichoramine Solution, as long as it comes in contact with affected areas. Dr. Price states that the use of Howe's Silver reduction and application of Iodine and Formalin will sterilize pulp canals and dentine.

Dr. C. N. Johnson states that he has radiographs of pulpless teeth which tell their own story. These teeth showed the canals filled and bone in good condition around the apex. The patient has had no trouble with the teeth in any way. One was a central filled, 21 years ago; two others 22 years ago, and the molar nearly thirty years.

If these men can do something in the way of treatment of these pulpless teeth, it is up to us to try to sterilize infected teeth and preserve them. The radicals who advocate the extraction of pulpless teeth do not believe these areas can be cleaned up. They say that the difference in the X-Ray is due to the different angles, exposures and developments given the film.

In slides made from radiograms, it has been shown that these areas diminish in size. The host, therefore, must have the upper hand in the battle with whatever infection may be present, and will eventually sterilize the whole area. Men who have taken and grown a culture, have found these areas to be sterile.

Dr. Peters, of Boston, tells of two cases of his own, in which treatment through the root canal proved successful.

One was that of a man about 45 years of age, suffering from constant headache. Large apical, radiolucent areas were treated and the headache disappeared. Another was that of a woman about 45 years of age, having eleven or twelve pulpless teeth, a number showing radiolucent areas; and suffering from fatigue and dizzy spells. The teeth were treated and watched closely. The patient showed constant improvement and now seems to be in perfect health. The evidence of these cases, convinces us that physical symptoms do disappear after careful treatment of the teeth.

In the treatment of these teeth we cannot expect to lay down any inflexible rule as to the retention or extraction of them because we must consider the health of the patient, and the condition of the apical and surrounding tissue and our own skill and limitations. The dentist and physician must co-operate. The dentist should report the oral foci of possible systemic infection to the patient and the patient's physician.

Vital pulps of teeth with small cavities through the enamel, and teeth with gingivitis contain bacteria, so to be 100% free from infection we must practise an entirely different brand of Dentistry from that at present in vogue. Extraction and root canal treatment may remove infection, but preventing cavities and keeping gums healthy is the kind of dentistry we must all strive to practise, if teeth and dentistry are not always to be looked upon with suspicion.

The hideous wrecks that have been made of many mouths are a serious reflection on the practice of the men responsible for this mutilation, and the things which are done now will not be tolerated in the next generation. It is our duty as conscientious operators to do our best, and to at least attempt to treat these infected teeth. If we fail, we can extract the tooth, but if we succeed, greater is our reward, in that we are doing something worthy of the name of Dentistry.

CAPPING EXPOSED PULPS.

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One of the main features in pulp capping is the difficulty of the operator to decide the method of treatment which will conserve the best interests of the patient. The first great difficulty lies in the prognosis of those cases in which the decay has extended to such a depth that its thorough removal will expose or nearly expose the pulp. Here the conscientious operator must decide whether it will be best to try to save the pulp, to cap and protect it, or devitalize and remove it, subsequently filling the root canals.

The success or failure following an attempt to save the pulp after it has been actually exposed depends largely upon several important factors. Among these, the history of the exposure ranks first. In accidental exposure in the preparation of a cavity, provided the injury has not been too great, the chances of recovery are far more favorable than when the pulp has been exposed by the necessary removal of carious dentine. Then again, one must take into consideration the condition of the pulp as well as the condition of the mouth of the patient in which the exposure occurs. Any evidence of degeneration or congestion of the pulpal organ condemns any attempt to permanently save it, as would also any attempt to save a pulp in the mouth of a patient suffering from some systemic derangement with the general circulation, thus lessening vital resistance, for in such cases, the pulp would fail to receive from the blood supply, the necessary elements for the restoration of its functional activity. Next the general condition of the mouth itself and the care it receives daily from the patient, is well considered before proceeding to cap a pulp. As Dr. S. A. Hopkins of Boston proved that germs not only proliferate more rapidly in neglected and uncared-for mouths, but their pathogenic properties are greatly increased.

There is one class of pulp exposure which more frequently presents itself in a busy practice, and becomes our conscientious duty to make our best possible attempt to restore the organ to its normal function even though all conditions for doing so are not altogether favorable. This class comprises those cases in the mouths of young patients where the pulp is exposed through decay, and the roots of the tooth have not yet been fully developed.

Every effort should be made to cap such a pulp and thereby save it, if for only a year or two. While as a rule it would be expected that the pulp would die, there remains the possibility that it may live to complete the formation of the root. Whenever a capping is undertaken under these conditions a temporary filling should be placed in the cavity and the vitality of the pulp tested at regular stated intervals, so that the pulp may be promptly removed if it dies, and if upon removal of the pulp, it should be found that the apical foramen is so large that it is impossible to make a proper root-filling, the only alternative is to extract the tooth. For we have been taught that to remove the pulp and properly close the large openings in the ends of young roots is a very difficult procedure, and besides a tooth in this condition, and thus treated, is usually a source of infection, and its usefulness is of short duration.

If the first capping which has been judiciously made, fails, we should abandon the case at once as every renewed attack of pain marks an extension of the inflammation in such cases. Besides the first effort has therefore been made under the very best conditions which could occur in this particular case, and a repetition of the effort is simply to worry the patient, without accomplishing anything, in such a large proportion of the cases that it is not justifiable.

During the period of calcification, the apical end of the partially formed root is wide open so that there is little danger of the death of the pulp from strangulation. There is room for both arteries and veins to become enlarged, during the process of repair to simple injury. Of such pulps, if only slightly exposed while excavating, a considerable number will live if carefully capped, and protected from further irritation, while those exposed by caries, will generally die, although a few live.

Another class of cases that present themselves, in which we are justified in capping the pulp is in those cases of exposure, when it is desirable to save a tooth, on which it would be difficult to adjust the rubber dam, aseptically remove the pulp and thoroughly fill the canals. Not wishing to infer that a pulp in an anterior tooth should be capped because of the liability of the tooth-structure discoloring after the pulp has been removed.

In reviewing the healing powers of the dental pulp we see that most of the efforts which have been made to save exposed pulps, by capping in, have resulted disastrously, and the operation should not be undertaken except under the most favorable conditions. And from these cases it can readily be seen that no set of rules can be given, which will assure absolute success, so every case must be studied and treated according to the pathological condition found, and the operator's best judgment after having taken into consideration all the various factors.

One difficulty in the treatment of pulp capping is the control of the patient, or in bringing the patient to a realization of the cause of the condition and the treatment necessary to allow the pulp to recover. It is a good rule, when a patient prevents, for the dentist to emphasize the fact that one of two things will probably occur. Either the pulp will gradually recover, or the pain may become worse and then the tooth may suddenly be free from pain entirely. The patient should be warned that if the latter occurs, the probability is, that the pulp has died, and there is a danger that an abscess will develop unless the dead pulp is promptly removed. In any event, the dentist should, if possible, have the patient return at regular intervals in order that he may have definite knowledge of the progress of the case.

The indications for capping may be summed up as:—

1. During the childhood period (that period between the time of the eruption of the tooth and its complete calcification of the root) while the apical foramen is large, whether exposed by caries or in excavating.

2. Slight exposure with hand excavation in fully formed teeth.

3. Never in fully formed teeth if exposed by caries.

4. Never if exposure is made with a bur.

Technique for capping:—

If an effort is to be made to save an exposed pulp, the aim should be to avoid as much as possible any further irritation. There are several methods of capping the pulp, each differing only in minor details, such as the use of various cements, gutta-percha, concave metallic, etc. There are many general precautions to be taken with different methods of capping; those to be observed in following any method are as follows:—

1. The hyperemic pulp must be restored to normal before final capping; this can be done by the use of an anodyne.

2. The dentine overlying the pulp must be thoroughly sterilized, not by the usual method of sterilizing the dentine by simply applying a

germicidal solution to the cavity for a few months, as this has without doubt been the chief cause of many failures.

3. Pressure, in applying the material for capping, or the cement which covers the capping, must be avoided.

After breaking down all overhanging edges of enamel and removing as much of the debris and softened dentine as can be done without pain or injury to the pulp, the cavity should be flooded with a mild non-irritating, antiseptic solution, previously heated to the temperature of the body. Buckly advises phenol compound for this part of the technique. The excess can now be absorbed from the cavity with cotton and the dam adjusted.

By using a sharp spoon excavator the remaining carious dentine can be removed, unless in doing this, would make a large exposure in which case it is better to leave the layer overhanging the pulp and depend on the sterilizing agent, than to jeopardize the life of the pulp by the injury thus produced. The delicate pulp tissue will not tolerate much abuse and still remain quiet. The dentine can now be sterilized by sealing in the cavity for a week or two, the following germicidal and anodyne remedy:

Menthol	gr. XX.
Thymol	gr. XL.
Phenol	ZIII

Under this treatment the pulp will very likely return to normal from its hyperemic condition.

At the next sitting, the case giving a favorable history for the interval, the dam should be applied, and the previous dressing removed carefully, when the exposure and dentine immediately over the pulp can be gently covered with a thin paste of pure precipitated calcium phosphate and phenol compound, oil of cloves, or eugenol. The paste should be placed on one side of the cavity and gently coaxed over the exposure, in such manner to exclude all air. This paste is antiseptic and non-irritating and should cover the entire dentine immediately over the pulp as well as the exposure, thereby protecting the pulp from the irritating properties of the phosphoric acid of the temporary cement used to cover the paste. It is best to fill the cavity now with temporary cement and wait for a few months or perhaps a year before inserting any permanent filling or inlay.

Another good method is described as follows:—If there be any hemorrhage, the blood should be absorbed with spunk. The immediate area should then be slightly moistened with a very mild antiseptic such as oil of cloves or eugenol. A strong antiseptic should not be used, on account of the danger of increasing the inflammation of the pulp. The dentine about the exposure should be dried with cotton. Then, if the shape of the cavity will permit, a very thin wafer of pink gutta-percha is slightly moistened with eucalyptol and placed over the exposure. The eucalyptol will render the gutta-percha sufficiently sticky so that it will adhere to the dentine. Then a small piece of stiff writing paper should be cut so that it may be laid in the cavity over the gutta-percha. When this is ready a mixture of oxyphosphate of zinc cement should be placed on the piece of paper, in a small globule. The paper should then be carried to the cavity and placed with the cement over the gutta percha, making gentle pressure on the paper to flatten the cement into a thin layer. If the cavity is too small to permit the gutta-percha layer, this may be omitted and the cement capping used instead. Avoid forcing the cement into the pulp chamber

After the cement is thoroughly hard, a temporary filling should be placed, leaving the paper over the cement capping, in order that there will be no danger of removing the capping when the temporary filling is removed. Permanent fillings should be postponed until the formation of the root is surely completed, or six months to a year in which cappings have been made in adult teeth.

In summing up we should emphasize the importance of carefully studying the conditions as found in the mouth in each case; and the care that is necessary to protect a vital pulp, gives us an opportunity for exercising good judgment, and that there is satisfaction in realizing, whether we succeed or fail in our effort to save the pulp, that we did our duty as we saw it and to the best of our ability.

DUCTLESS GLANDS AND THEIR RELATION TO VITAL PHENOMINA.

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The ductless Glands, spoken of quite comonly as the Endocrine organs, comprise those glands of the body which secrete substances entering the blood stream. The ones of particular interest are the Adrenal glands, situated above the kidneys, the Thyroid, Parathyroid and Thymus, situated in the lower front part of the neck and the pituitary bodies situated on the base of the brain and lying on the sella turcica of the sphenoid bone.

A great deal of experimental work has been done in the way of determining the exact function of these glands and there seems to be some relation existing between several of them, largely that of metabolism. Roughly speaking two methods are employed in experimenting. (1) Excising all or part of the gland and observing the effect produced on different organs of the body, (2) Injecting the principle, when it has been isolated, intravenously.

The observations made by different men vary widely and in many cases the theories advanced seem to be directly opposed to each other. First let us consider the general effect produced by each gland, and then the dental aspect of the whole.

The Adrenal gland is made up of two parts, the Cortex and Medulla. The Cortex seems to be definitely associated with the development of the sexual organs. In cases of premature development it is found that the Cortex is hypertrophied, also during pregnancy and following castration the same condition is observed. Death very shortly follows after the removal of the Adrenals but if 1/8 of the gland is left, life is sustained. The Medulla is difficult to study separately on account of its structure. The principle of the Adrenals is called epinephrine and by intravenous injection it is noticed that it causes constriction of the blood vessels, and diminishes the tendency to fatigue. In cases of sudden excitement or fright a larger discharge may take place, causing a rise in blood pressure, inhibition of intestinal movements, bulging of the eyes and bristling of the hair, results similar to those produced after injection of the active principle. Another result of over secretion or injection causes glucose from the glycogen in the liver to be thrown into the blood.

The Thyroid and parathyroid glands are very closely related. The Thyroid gland gives rise to the common disease of goitre. The active principle of the gland is called Iodothyrin similar to iodine and is associated with the metabolism of Amino acids and when mixed cause an increase in the pulse rate. The administration in early stages of goitre prevents its further development. At birth, if the thyroid is found to be atrophied, the patient does not develop normally, especially the skeleton, producing undeveloped long bones and failure of the frontanelles to unite, signifying a close relation to the calcium distribution in the body. A dry swollen skin results and an abnormal amount of connective tissue is produced with shapeless hands and feet. In adults the symptoms are characteristic. The skin becomes swollen and thick, great layers of fat appear on the body, loss of appetite and nervous conditions result.

An interesting result from experiments made by Prof. Fujisawa, of Tokio, regarding the presence of iodine distribution in the body has been obtained. He has definitely ascertained that in tuberculosis iodine forms an organic compound with a fat lipod substance (not albumin). In syphilitic tissue more iodides form organic products and that in suppurating foci, whether or not due to bacteria, the pus contains more iodine. From this it may be concluded that iodine which closely resembles the thyroid extract, is an agent used by nature to ward off disease and act as nature's antiseptic. At any rate it seems to be generally admitted that the endocrine organs act cojointly in attempts to overcome disease of various kinds.

The Parathyroid glands seem to influence the calcium metabolism. McLeod claims that the results of parathyroidsectomy are, (1) Rapid emaciation and failure to grow, (2) Assimilation of carbohydrates is lowered, (3) Interference in Calcium metabolism, (4) Death from tetany as proven by Kellogg and Voegtlin is due to lack of calcium salts in the blood.

Recently Kendall of the Mayo Institute has been able to extract from the thyroid gland a substance, "Thyroxin," which contains 80% iodine and is found to be much more powerful in its reaction. One milligram will raise the metabolism of the body to normal and is found very beneficial in treating cases in which the thyroid causes physical deformities in children.

The two lobes of the pituitary body seems to have distinct functions. The anterior lobe produces autocoids having to do with skeletal development of the body. When the anterior lobe is removed it shows its effect in that the patient can tolerate a much larger amount of carbohydrates without producing glycousuria. The patient becomes mentally dull, fat and small.

Robertson has been able to isolate "tethelin" from the anterior lobe which, on injection, causes acceleration in growth and may also hasten the healing of wounds. Clark has conducted interesting experiments with hens, confined and fed a small quantity of pituitary substance. It was noted that the output of eggs increased about forty per cent but that the fertility of the eggs was very considerably diminished. When fed to young mice it increases the growth and produces a glossy growth of fur.

The effects of pituitary extract of the posterior lobe, "pituitrin," is similar in action to that of opinephrine, in that it acts directly on the involuntary muscle fibres. The glands most directly affected by pituitrin are the mammary glands and the kidneys. In the mammary glands it causes an increase in the flow of milk already collected in the alveoli and ducts, so that there is always a reaction following. In the kidneys the result is a marked increase in the flow of urine.

A marked contrast between the two lobes is seen when pituitrin is injected intravenously. This produces a very marked lowering in the tolerance for carbohydrates and a resulting glycousuria is established. When there is a growth of the anterior lobe and a hypersecretion, it causes defective vision, headaches; the bones become large, producing a condition known as gigantism. This condition shows itself mostly in the long bones of the body, the hands, feet, lower jaw and very prominent supraorbital ridges. The skin becomes dry and yellow, and abnormal growth of hair on different parts of the body and a failure in the sexual power is an early symptom. Later there is a marked lowering of the tolerance for carbohydrates. In boys when there is a lessened secretion before adolescence the body fails to develop, the limbs remain rounded and feminine in shape, hair on the face does not appear, sexual development is markedly interfered with, mental development retarded and there is marked tolerence for carbohydrates. In maturity, if hypopituitarism takes place, the symptoms are not so marked but there is a general tendency for the body to assume female characteristics, pigmentation of the skin and a marked tolerance for carbohydrates.

There seems to be a close relationship between the pituitary gland

and the development of the sexual organs. It has been observed that after castration an enlargement of the pituitary occurs. During pregnancy the pituitary gland is often enlarged two or three times its normal size.

Broderick of England has made some extensive investigations regarding the effect of the endocrine derangements of the teeth. His work shows that he has discovered some important factors principally relative to caries. There are, he claims, two forms of calcium distribution in the body. The first is the form of the fixed tissues, helping to build up the framework of the body. The second is a floating form in a loose state of combination ready to make up the wear and tear and to take part in all forms of repair. The metabolism of calcium is, so far as is at present known, regulated through the ductless glands.

Dr. Husband claims that caries is the direct result of the ingestion of a greater quantity of carbohydrate food than the body can assimilate. Now the ductless glands in different conditions control the carbohydrate tolerance. The secretion of the adrenal gland renders the body less susceptible to fatigue, in other words the individual who has an abundant secretion of epineprine is of the vivacious, tireless type. These types of people can tolerate a greater quantity of carbohydrate food than the dull quiet inactive type so that it seems reasonable to suppose that there is a close relation existing between the food we eat, the normal condition of the endocrine organs and diseases of tooth tissue.

It is generally admitted that caries is finally brought about by an acid condition of the saliva. Lactic acid has a great affinity for calcium and Broderick has also been able to demonstrate that calcium starvation of the system produces an acid condition of the saliva as well as the fact that the alkalinity of the saliva is raised when the calcium balance returns to normal.

Cases are recorded where the feeding of thyroid extract hastens the eruption of teeth and on removal of the gland that the temporary teeth are retained past their proper time.

Tetany is a disease supposed to be caused by the lack of the floating calcium content of the body, at any rate life is prolonged by the feeding of calcium. Fleishman reports that in all cases of tetany he has examined the teeth show signs of degeneration, the enamel scaling off and the bone of the lower jaw frequently showing indications of necrosing ulcers.

The pituitary body is closely connected with calcium metabolism and with the development of the sexual organs. During pregnancy there is almost invariably a decalcification of the teeth. "With every child a tooth" has become a realistic evidence on the part of nature to take up calcium from the teeth and to be used in building up the skeletal form of the foetus. During preganacy, as has been previously stated, the pituitary gland has often been found enlarged two or three times its natural size. This seems to be an attempt on the part of nature to maintain the calcium balance required during pregnancy. It seems quite probable that if disease of the pituitary should in any way effect the normal secretion that the teeth, therefore, would suffer due to increased acid condition of the saliva and lessened calcium content.

Taken as a whole the endocrine organs seem to act as toxin eliminators. In acute illnesses there is an unusual strain on the secretions and the body seems to require a proper balance of food to overcome these toxins and allow the glands to function properly. Experiments have been conducted with individuals suffering from febral diseases by injecting small doses of mixed extract from the pituitary, adrenal and parathyroid gland. It was found that after a few administrations that the calcium content was raised and that the alkalinity increased as well, definitely showing that the glands mentioned above have to do with maintaining the proper balance.

During the adolescent period there is naturally a greater demand on the part of the body for calcium to meet the demand for growing tissues of the body. At this period of life caries seems to be much more prevalent than at any other time. During the same period possibly more carbohydrates in the form of sweets are taken into the body and together with the natural increased requirement for growth, it is only a natural consequence.

The older a person becomes the less demand there is on the part of nature for calcium so that if the teeth are retained beyond the age of susceptiblity there is less danger of caries. In fact there is quite frequently an over supply of calcium and the result of this is shown in the stiffening of the joints, enlarged joints, hardening of the arteries, and the theory has been advanced by some that periclasia is caused by the deposition of lime salts under the free margin of the gum, causing irritation and a subsequent sloughing of the tissues.

The whole subject is one that has long been under investigation and many in fact nearly all the supposed functions and conclusions arrived at in the past were merely conjectures and theories. It seems, however, that the health of the body and freedom from acute disease is largely regulated by the proper secretion from the ductless glands. This, in turn, may be largely regulated by the injection of the proper foods in the proper proportions to meet the body requirements, varying with the individual and his activities in life.

DEPOSITION OF CALCIUM SALTS.

W. J. Armstrong, D.D.S., L.D.S.,

(Read before Ontario Dental Association, Toronto, June, 1921)

Numerous experiments have aptly demonstrated the great necessity of calcium not only for the growth of bone and the hard structures, but also for that of the soft tissues. Adults require on an average daily consumption about 15 grains of calcium oxide. Most of this calcium is obtained from drinking water, eggs, milk and green vegetables and a slight amount from animal flesh cereals and fruits. The absorption of this calcium is not very ready but it is greatly favoured by the acid of the gastric juice, although a very great amount—60 to 80%—passes out unabsorbed.

The blood, the lymph, and most of the tissues of the body contain lime salts; two-thirds of the weight of bone is made up of earthy matter. Calcareous deposition in a tissue may, therefore, be due to precipitation of the lime contained in the tissue, to precipitation of lime normally contained in the blood and lymph or to excess of lime circulating in them derived from disintegration of bone.

If the lime salts be held in solution by the carbon dioxide present in the blood and lymph, then lowered metabolism of the tissues, and enfeebled circulation, such as occur in old age, would, from lack of carbonic acid favour the prescription of the calcium salts of the lymph as is seen when the walls of arteries calcify while veins do not. Hardening of the walls of the left heart is common, of the right heart not; calcification of the renal glomeruli which normally contain alterial blood is likewise common.

Calcification is very liable to occur in dead, dying or decaying tissues; it is often found associated with or following fatty degeneration especially caseation. Many new growths undergo calcification in the centre where nutrition is impaired as in sarcoma. Calcareous infiltration occurs in process of time in abnormal or vitiated secretions of organs. Calcareous deposits are thus met with in the salivary glands, pulps of teeth, pancreas, tonsil, articulations, and synovial sheaths; and in the interior of cysts of the thyroid and kidney.

A great many experiments have been made to determine the exchange of material in the bones—for instance with food rich in lime and with food deficient in lime—but the results have never proven satisfactory. On feeding sufficient calcium and phosphorous in the food Aron found, by strongly reducing the sodium and at the same time giving a large amount of potassium, that the development of the bones was below normal.

The tooth structure is closely related, from a chemical standpoint, to the bony structure. Of the three constituents of the teeth—dentine, enamel, and cementum—the cementum should be considered as a true bony structure. Dentine has the same composition as the bony structure, but contains somewhat less water. Enamel is an epithelium formation containing a large proportion of lime salts. Completely developed enamel contains the least water, the greatest quantity of mineral substances, and is the hardest of the tissues of the body. The relative amounts of calcium and phosphoric acid are shown to be about the same as in bone-earths.

In tooth development dentine is first laid down about the 120th day at the top of the dental papilla. The odontoblasts next line in a sudoidal substance which becomes crystallised and the odontoblasts begin to grow. Immediately beneath the odontoblasts is a layer of replacing cells. These cells secrete a substance—colloidal dentine—which, as it is being secreted, the cells retract so that only the top of the cell is surrounded by the secretion. As this continues there is found to be a long tubule of dentine at the top of the cell.

The development of cementum is similar to that of bone. It is laid down by the cementoblasts which are similar to osteoblasts. Cementoblasts secrete a substance similar to bone. During the early stages of development there is a deposition of cementum with few or no lacunae.

The enamel develops from the primitive enamel organ. It is formed from ectodermic tissue and is fully developed before the tooth erupts. From the ameloblast cells caleoglobulin is secreted,—this is lime in solution. Enamel rods are either pentagonal or hexagonal and run at right angles to the enamel. They are the dropping down of enamel globules to the bottom or a dropping down through the bottom, flattened out. Enamel is a conversion of odontoblast cells.

Besides these conditions where calcium salts are normally laid down in tooth structure, they are also found existing in the pulp chamber and at the ends of roots causing pathological conditions as in secondary dentine, clear calcifications, pulp stones, fusiform calcifications and deposits entirely fitting up the pulp chamber and canal.

Secondary dentine occurs oftenest and is more regularly seen in teeth affected by abrasion, erosion and in dental caries where the decay is not abnormally rapid, so keeping the nerve fibrils more or less exposed to irritation. In his book on Special Dental Pathology Black says of secondary dentine—"The physiological import would seem to be that the growth of secondary dentine is a response to irritation of the dentinal fibrils, and has a definite intention of placing the soft tissues of the pulp farther from the source of injury, and thus protecting it. From any viewpoint whatever, this idea stands out prominently. For instance, when we observe a tooth that has a number of facets worn into the dentine in cup shapes in the position of the cusps, and particularly in those cases in which the patient has had much pain from these in biting hard substances, because of the sensitiveness of the exposed dentine, we may know that the growth of this secondary dentine is starting." In cases where abrasion has progressed to such an extent that the crown of the tooth has been practically all worn away, calcific deposits, of a different color from the surounding dentine, may be seen completely fitting what was formerly the pulp chamber. This deposition of secondary dentine may likewise occur reflexly from an impression made upon nerve centres by the irritation of the dentinal fibres as was seen in cases where the mouth contained teeth worn down from abrasion and erosion and also teeth with the opposing teeth lost yet all suffered from a deposit of secondary denture alike.

Again, there are found deposits in the pulp of a calcium nature which are not attached to the wall but remain free. The most common of these are pulp nodules or pulp stones; calcifications of a fusiform shape in the root end of the pulp, and occasionally all or nearly all the pulp tissue will be found to have been impregnated with calcium salts. One form of pulp in which calcific deposits have occured is where these deposits seem jointed and give a stiffness to the organ so that it may be bent into any position and remain there, as would a piece of soft lead wire.

Another form of calcium deposits in the pulp is an arrangement of concentric spheres known as calco-spherites. They occur but rarely and have a characteristic marking in that they appear like a tiny onion when cut through the medium line. Calco-spherites may be artificially formed by adding finely powdered calcium salts to a solution of albumen, then forcing carbon dioxide through this and after sealing up let the solution stand for several months. In the body calco-spherites are mostly found in positions where there has been a stagnation of blood.

Again quoting Black, he says, in part, in his discussion of calco-spherites,—"When we consider that as a matter of fact the teeth and bones are formed by combination of calcium salts with colloids, from which we may dissolve the calcium salts, leaving the colloids in the soft state, we see the widespread importance of a closer study of this subject. There is no true crystallization in the formation of these calco-spherites, or, so far as I am able to grasp it, in the formation of bones, dentine, or enamel." Also—"As has been stated previously, globulin already loaded wth calcium salts (calco-globulin in fact) comes into the mouth with the saliva, and is formed into salivary calculus, and also globulin that has apparently no calcium salts in its make-up comes into the mouth and is not formed into salivary calculus."

Besides deposits of calcium occurring within the tooth there is likewise found an occurrence of its depositions on the surface and surrounding structures as in salivary calculus, which is composed of calcium phosphate and a small amount of calcium carbonate. This salivary calculus is formed from the precipitation of calcium salts in the saliva. This precipitation usually finds lodgment on some roughened surface or out of the way spot, settles down, forms itself compactly, and hardens into stone-like masses. All of the fluids of the body contain carbon dioxide which has the power of holding salts in solution along with the influence of blood pressure. Thus these fluids may be surcharged with carbon dioxide and calcium which becoming exposed to the outside air the carbon dioxide is given off thus causing a precipitation of the calcium salts.

During pregnancy, it is commonly believed, that the growth of the foetus results in a decalcification of the blood of the mother and that the wear and tear of dental and osseous tissue is replaced by tissue poor in calcium. The teeth may soften and caries supervene. It may therefore be seen that a diet rich in calcium content should be maintained or, if necessary, calcium salts administered directly.

From investigations made on the calcium content in the blood serum of normal infants and those suffering from tetany—a convulsive disorder—it was found that the normal calcium content of the serum is from 10 to 11 mg. per 100 c.c.; that in rickets there is a moderate reduction of the calcium in some cases, but a number of apparently active infants showed a normal amount of calcium. In tetany the calcium of the serum is greatly reduced. Calcium administration produces a prompt effect on the course of tetany. In a few hours the conclusive symptoms disappear. The calcium must be continued, however, for a long time. Calcium chloride administered by the mouth causes an increase in the calcium of the serum, although in some cases the calcium content of the serum did not return to normal.

Hewlett, in his work on Pathological Physiology of Internal Diseases says in part, on tetany—"The calcium metabolism is also disturbed. McCallum and Voegtlin showed that animals suffering from parathyroid tetany have an increased output of calcium salts in the urine and feces and a reduced amount of calcium in the blood and brain. The intravenous injections of calcium salts into such animals leads to a prompt amelioration of the symptoms and life may be markedly prolonged by repeated injections. Apparently the parathyroid glands exert some influence upon the retention of calcium by the nerve tissues." The suggestion that lack of calcium may be the direct cause of tetany has lead to its employment with conflicting results; for while in some cases, marked results have taken place, in others no apparent relief of the symptoms may be demonstrated. Nevertheless the relationship between disturbed calcium, metabolism and various forms of tetany is suggested by the fact that tetany occurs with unusual frequency in conditions that are associated with other alterations in calcium metabolism, such as rickets, osteomalacia, pregnancy, etc. In these conditions there are complicated historical changes which appear to depend upon chemical alterations, and to arise in response to changes in the available amount of calcium or to disturbances in the power of the tissues thus freshly produced to seize upon the dissolved calcium and fix it in solid form.

Besides deposits of calcium occuring normally in the bone and tissues pathological symptoms may occur. For instance, it is quite common to find tubercles in the lung which contain central parts in which calcium salts are deposited. The lymph glands of the mesentery may undergo the same change with tubercle infection. The walls of the aorta and other large arteries may contain plaques of calcified material conforming to the curve of the wall. Such calcified areas are also found in the arteries and the muscular coats of the smaller vessels.

McCallum in his book on Pathology says of calcium salt deposition, —''Calcium, which in various combinations plays many important roles in the animal body, is absorbed in the intestinal tract, and in very considerable quantity resecreted into the intestine, altho the execretion is also carried on to a less extent in the urine. Its most obvious application in the body is in the formation of the rigid tissues of the skeleton but it seems to have a very important influence upon the activity of the heart, the excitability of nerves, the clotting of blood, etc., and is found to form a constant constituent of the blood and tissues.''

The pathological disturbances in calcium metabolism might readily fall into two groups: those in which there is an inadequate supply or excessive withdrawal of calcium, and those in which the reverse occurs and the tissues become the seat of abnormal accumulations of lime salts. In both instances the disturbances may be local or general, and indeed it seems possible that calcium may be removed from one place, only to be deposited again at another place in the body.

A TRIP IN WESTERN CANADA.

A trip through Western Canada is worth while. An eastern dentist is bettered by the broadening influence of contact with western notions. Incidentally he learns some geography and gets an inspiration. Western Canada is naturally divided into three distinct areas, each having its own geographical characteristics as well as distinct social and political aspirations. The great lakes and wooded hills and rocks of Northern Ontario are so close to the older portions of Canada that its people are little different from the older portions, but once the great open plains are reached, there is a broader and bigger atmosphere pervading everything. Although Manitoba has been well settled for almost forty years, its people are not the same type in aspiration and outlook as those who live in villages and towns nestled among hills and brooks, and surrounded by farms of a hundred acres and less in Ontario. So long as the towns and cities of the West are peopled from farms of hundreds and thousands of acres, they will think in larger figures than people in Eastern Canada. Indeed there is some excuse for the town lot speculator in the West. The country is so large and the land so productive that no one could but think that any well situated village would be a city some day.

In the well-settled districts it is not uncommon to see miles of grain without an intervening barren stretch. The wonder is how so much grain could be sown in the seeding season or harvested in late summer. And then when one thinks of those two acre to ten acre fields of the East, he wonders how it is worth while to cultivate them or why the growing of grain should be attempted on so small a scale, when the efforts of one man in Western Canada will grow more grain than those of five in the East. No Westerner wastes his time driving one or two horses for any purpose, four and six horses are most common for ploughing, cultivating, binding and teaming, while many eight horse teams are used. One wonders why gasoline or steam tractors are so little used on such level wide fields but the answer is that they are too expensive. One farmer said he compared tractor power with horse power in almost every kind of work, and found horses the cheaper. In many districts of Saskatchewan and Alberta, horses and cattle are not housed in any way the year round; in such districts, horse power would be even much cheaper than when horses are cared for in stables.

The Easterner is so often taken with the wide stretches of cultivated land that he forgets to mention the fact that much of Saskatchewan and most of Alberta is rolling country, and that in many parts of these provinces, the land is broken with woods, lakes, muskeg, swamp, and shrub willow and poplar. The dry, non-wooded ridges are often cultivated in irregular patches, much like the south. The grazing areas of Southern Alberta are mostly rolling and treeless, while the north is much wooded and suited to mixed farming. Except in the deep and narrow river plains, there are no large trees, although they grow vigorously when planted. In Southern Alberta they need watering the first year during the dry season.

Whatever sense of measurement the Easterner has retained on the plains of the central provinces is completely lost as British Columbia is reached. If he is told in Alberta that he now stands in a field measuring two hundred and fifty acres, he may say nothing, but inwardly doubts it. Or he knows that a certain town or mountain is only seven or at most ten miles distant, no matter what honest friend says that it is fifty miles. When his partner at the first tee on the Edmonton golf course says the hole is four hundred and thirty yards, and that the bunker cannot be reached with a drive and a mid-iron, he just inwardly smiles and says to himself, "Wait till I drive." When the guide in the mountains says: "That snow-capped peak yonder in the distance is Edith Cavell; it is twenty miles off and two miles high, and a three-days' trip on horseback to the snow-line," inwardly he believes he could walk straight up the thing in three, or, at most, four hours. There is Mount Robsbon twenty miles away and three miles high that could almost be hit with a stone by a lad who has been used to bringing the cows home on an Ontario farm. There is a canyon five hundred feet deep with trees three hundred feet high and seven or eight feet in diameter, studding its sides. The edge of the glacier on yon mountain is six hundred feet thick and the mountain twelve thousand feet high. One might as well accept it all, because when one sees ponderous trees which have slid down the mountain side for a few thousand feet and then turned end over end into the Skeena, which has piled them up into driftwood on a rock or island in its bed, there is little room for disbelief. The trip south on the Pacific Coast seasons one to picturesque mountain grandeurs. And then come the flowers of Vancouver and Victoria. Suppose that everything were accepted as to the size of the rivers, trees, mountains and rocks, here are the roses. The things they call roses in the East are mere pigmies in size, color, odor and vigor. The only familiar plant grown in B.C. which does not make the Eastern product look inferior is the aster. Everything from the mountains to the blade of grass is on a larger and more perfect scale than east of the Rockies. Fruits and vegetables grow most luxuriantly, but apparently lack a refinement of flavor which is found in more rigorous climates.

In a country such as this the people take on its characteristics. They are large of heart and mind, ambitious to do the big things in the records of their country and their homes.

Victoria is a city on the west coast of Canada,—hardly of it. It is a most beautiful place, its people are wealthy and refined, its climate that of the tropics without the extremes of heat. It is of itself. Vancouver is a substantial city of great business possibilities, built for the future.

From the great lakes to the coast the dentists have the spirit of the country breathed into their souls. They are progressive and aggressive in their calling as well as citizens of influence in their communities. Everywhere post-graduate and study clubs are organized. The profession is made up of young men who have the spirit of a growing country.

DOMINION DENTAL COUNCIL EXAMINATIONS.

The results of the examinations for 1921 show that the following have passed in the subjects named:

Operative Dentistry (Practical)

Abar, Harold Adams, Akins, R. B. Adams, Barber, Barnes, Barton, Bertrand, Best, Butler, A. A. Cameron, Crowe, Coughlin, Corbett, Daly, Derbyshire, Dinniwell, Dobbs, Dodds, Dunbar, Dixon, Elliott, Gabriel, Granovsky, C. C. Graham, F. M. Graham, Gott, Hoar, Hunter, Joyce, Johnston, Kinsman, Lawley, Layton, Lumb, Mills, Mitchell, Marshall, MacKay, Mackee, McCutcheon. Olson, Porter, Robb, Rogers, Smart, Smith. Sockett. Steel, Sheridan, Taylor, Teal, Upton, C. B. Wilson, Whittaker, Wessels, T. R. Wilson, Windrim, White, Zimmerman.

Prosthetic Dentistry (Practical)

Abar, Harold Adams, Akins, R. D. Adams, Barber, Barnes, Barton, Bertrand, Best, Cameron, Crowe, Coughlin, Corbett, Daly, Derbyshire, Dinniwell, Dobbs, Dodds, Dunbar, Dixon, Elliot, Gabriel, Granovsky, C. C. Graham, F. M. Graham, Gott, Hoar, Hunter. Joyce, Johnston, Kinsman, Lawley, Layton, Lumb, Mills, Mitchell, Marshall, MacKay, Mackee, McCutcheon, Olson, Porter, Robb, Rogers, Smart, Smith, Sockett, Steele, Sheridan, Taylor, Teal, Upton, C. B. Wilson, Whittaker, Wessels, P. R. Wilson, Windrim, White, Zimmerman.

Operative Dentistry (Written)

Abar, Harold Adams, Aikins, Barber, Barnes, Barton, Bertrand, Best, Cameron, Crowe, Daly, Derbyshire, Dobbs, Dodds, Dunbar, Elliot, Gabriel, Granovsky, Hoar, Humber, Joyce, Kinsman, Lawley, Layton, Lumb, Mills, Mitchell, MacKay, McCutcheon, Olson, Porter, Robb, Rogers, Smart, G. R. Smith, Sockett, Steele, Taylor, Upton, C. B. Wilson, Zimmerman.

Prosthetic Dentistry (Written)

Abar, Harold Adams, Barber, Barton, Bertrand, Best, Cameron, Crowe, Daly, Derbyshire, Dobbs, Dodds, Dunbar, Elliot, Gabriel, Granovsky, Humber, Joyce, Kinsman, Lawley, Layton, Mills, Mitchell, MacKay, Olson, Porter, Robb, Rogers, Smith, Steele, Taylor, Upton, C. B. Wilson, Zimmerman.

Anaesthetics.

Abar, Harold Adams, Aikins, Barber, Barnes, Barton, Bertrand, Best, A. A. Cameron, Crowe, Daly, Derbyshire, Dobbs, Dodds, Dunbar, Elliot, Gabriel, Granovsky, Hoar, Humber, Joyce, Kinsman, Lawley, Layton, Lumb, Mills, Mitchell, MacKay, McCutcheon, Olson, Porter, Robb, Rogers, Smart, Smith, Steele, Taylor, Upton, C. B. Wilson, Zimmerman.

Materia Medica and Therapeutics.

Barber, Bertrand, Calbick, Coupland, Dobbs, Dodds, J. E. Graham, Green, Heidgerken, Hesson, Joy, Joyce, Kerr, Killins, Lawley, Murdock, Annie S. MacKenzie, Robb, Rogers, Sharon, Shraggs, Smith, Yoerger.

Orthodontia.

Abar, Harold Adams, Aikins, Barber, Barnes, Barton, Bertrand, Best, A. A. Cameron, Crowe, Daly, Derbyshire, Dodds, Dunbar, Elliot, Gabriel, Granovsky, Hoar, Humber, Joyce, Kinsman, Lawley, Layton, Lumb, Mills, Mitchell, MacKay, McCutcheon, Olson, Porter. Robb, Rogers, Smart, Steele, Taylor, Upton, C. B. Wilson, Zimmerman.

Medicine and Surgery.

Harold Adams, Barber, Barnes, Barton, Best, A. A. Cameron, Crowe, Dodds, Dunbar, Elliot, Gabriel, Granovsky, Hoar, Humber. Joyce, Kinsman, Lawley, Lumb, Mills, Mitchell, MacKay, McCutcheon, McVicar, Olson, Porter, Robb, Rogers, Smart, Smith, Steele, Taylor, Upton, C. B. Wilson, Zimmerman.

Pathology and Bacteriology

Abar, Barber, Barton, Bertrand, A. A. Cameron, Coupland, Daly, Dodds, Dunbar, Gabriel, Greene, Joyce, Kinsman, Layton, Mitchell, MacKay, Annie S. MacKenzie, Olson, Porter, Robb, Rogers, Shragge, Smith, Sockett, Steele.

Jurisprudence and Ethics.

Abar, Harold Adams, Aikins, Barber, Barnes, Barton, Bertrand, Best, A. A. Cameron, Crowe, Daly, Derbyshire, Dodds, Dunbar, Elliot, Gabriel, Granovsky, Hoar, Humber, Kinsman, Lawley, Layton, Lumb, Mills, MacKay, McCutcheon, Olson, Porter, Robb, Rogers, Smart, Sockett, Steele, Taylor, Upton, C. B. Wilson, Zimmerman.

Physics and Chemistry.

Aikins, Arthurs, Barber, Bertrand, Bird, Brown, G. L. Cameron, Caniff, Clark, Clermont, Climo, Corbin, Coupland, Cowen, Craigie, Crich, Crosby, Daly, Derbyshire, Dexter, Dinniwell, Dodds, Dunbar, Elkerton, Elsey, Fennell, Findlay, Fonger, Fullerton, Gawley, Gellatly, Gooding, J. E. Graham, Guilett, Heal, Heidgerken, Hesson, Hillier, Hindson, Hodgson, Herton, Jackson, Jarvis, Johnston, Joy, Kerr, Langtry, Lawrence, Layton, Lloyd, Mandeville, Miller, Morphy, Morrison, Moyle, Murdock, MacKenacher, J. W. MacLeod, MacRitchie, D. L. MacKenzie, McBain, McCord, MacIntyre, McLaughlin, McLean, C.S. McLeod, C.D. McLeod, McMachen, McMillan, Pearce, Puller, E. G. Renwick, W. H. Renwick, Riley, Rivers, Roap, Robb, Robinson, Rogers, Ross, Rushton, Shragge, F. R. Smith, C. W. Smythe, Sproule, E. B. Steeves, A. C. Steeves, Sterling, Vivian, Wallace, Wansborough, Williams, F. St. C. Wilson, Wright, Wyatt, Yoerger.

Anatomy.

Aikins, Armstrong, Arthurs, Barber, Bertrand, Bird, Blight, Brayley, Brown, Bruce, Calbick, G. L. Cameron, Canniff, Carter, Clark, Clay, Clermont, Climo, A. R. Cook, H. M. Cook, Corbin, Corristine, Coupland, Cowen, Craigie, Crich, Crosby, Curtis, Dexter, Dinniwell, Dodds, Elkerton, Elsey, Fennel, Findlay, Fonger, Fummerton, Fullerton, Gawley, Gellatley, Gooding, J. E. Graham, Gullett, Hare, Harris, Heal, Heidgerken, Hellier, Hindson, Hobbs, Hodgson, Hurton, Jackson, Jarvis, Johnston, Kaye, Kemp, Kenny, Kerr, Killins, Langtry, Lawrence, Leyroy, Lloyd, Mandeville, Miller, Morphy, Morrison, Moyle, Murdock, MacKenacher, J. W. MacLeod, MacRitchie, D. L. MacKenzie, McCord, MacIntyre, McLaughlin, C. S. McLeod, C. D. McLeod, McMachen,, McMillan, Pearce, Prendergast, Puller, E. G. Renwick, W. H. Renwick, Riley, Rivers, Roap, Robb, Robertson, Robinson, Rogers, Ross, Rushton, Sharon, Shragge, F. R. Smith, C. W. Smythe, Sproule, E. B. Steeves, A. C. Steeves, Stevenson, Sudden, Sterling, Thompson, Turnbull, Vivian, Wallace, Wansborough, Williams, F. St. C. Wilson, Wyatt, Yoerger.

Physiology and Histology.

Aikins, Arthurs, Barber, Bertrand, Bird, Blight, Brayley, Brown, Bruce, Calbick, G. L. Cameron, Canniff, Carter, Clark, Clay, Clermont, Climo, Coupland, Cowen, Craigie, Crosby, Curtis, Dexter, Dinniwell, Dodds, Elkerton, Elsey, Fennell, Findlay, Fonger, Fummerton, Fullerton, Gawley, Galletley, Gullett, Hare, Harris, Heal, Heidgerken, Hesson, Hillier, Hindson, Hodgson, Hurton, Jackson, Jarvis, Johnston, Kemp, Killins, Langtry, Lawrence, Lloyd, Mandeville, Mihaychuk, Miller, Morphy, Morrison, Moyle, Murdock, W. F. MacKenzie, MacKenacher, J. W. MacLeod, MacRitchie, D. L. Mackenzie, McBain, McCord, MacIntyre, McLean, C. S. McLeod, C. D. McLeod, McMachen, Pearce, Porter, E. G. Renwick, W. H. Renwick, Riley, Roap, Robb, Robertson, Robinson, Rogers, Ross, Rushton, Shragge, F. R. Smith, A. C. Steeves, Sterling, Thompson, Turnbull, Wallace, Wansborough, Williams, F. St. C. Wilson, Wyatt, Yoerger.

CONSTITUTION OF THE DENTAL NURSES' ALUMNI ASSOCIATION OF CANADA.

PLEDGE.

"I solemnly pledge that in the practice of my profession, I will always be loyal to the welfare of the patients who come under my care, and to the interests of the practitioner whom I serve. I will be just and generous to the members of my profession, aiding them and lending them encouragement to be loyal, to be just, to be generous, to be pure, to be upright, to be observant, to be tactful, to be studious. I hereby give my pledge to devote my best energies to the service of humanity in that relationship in life represented by the title of Dental Nurse, conferred on me by the institution in which I have been privileged to receive my training."

ARTICLE 1—NAME.

The Association shall be known as the Dental Nurses' Alumni Association of Canada.

ARTICLE 2—OBJECT.

The purpose of this Association shall be to unite the Graduate Dental Nurses of Canada and to act as a representative body to deal with all matters in the interest of the profession of Dental Nursing.

ARTICLE 3—MEMBERSHIP.

Section 1.—This Association shall consist of active and honorary members.

Section 2.—Active members shall be graduates in Dental Nursing in Canada, who are considered in good standing with the Association.

Section 3.—A member shall be considered in good standing if she has in no way violated the graduating pledge and who has fulfilled her professional and financial obligation to the Association.

Any member who has not fulfilled these obligations shall be liable to forfeiture of her membership. Such forfeiture to be at the discretion of the Advisory Council of the Association.

Section 4.—Such scientific and professional persons as the Association deems advisable may be elected as honorary members by unanimous ballot. A list of such names to be kept on record by the Secretary.

ARTICLE 4—OFFICERS.

Section 1.—The officers of this Association shall consist of Honorary President, President, Vice-President, and Secretary-Treasurer, who shall be elected at the annual meeting of the Association and shall hold office until their successors are elected. The Vice-President has the first opportunity of being successor to the office of Presidency.

Section 2.—The Advisory Council shall consist of three members of the Faculty of the Royal College of Dental Surgeons, elected yearly at an annual meeting of Association.

Duties of Advisory Council shall be to advise the Association in all matters pertaining to the welfare of said Association.

Section 3.—No member shall hold the same office for more than two consecutive terms with the exception of the Secretary-Treasurer.

Section 4.—No member may hold office nor be on any committee who has not paid her membership fee for the current year.

Section 5.—The duties of the Secretary-Treasurer shall be to keep a correct record of proceedings of all sessions of the Association. To conduct all correspondence—to keep lists of all Active and Honorary members—to receive all monies and pay all accounts only on advice of the Executive.

Section 6.—The officers of the Association shall be elected annually by ballot.

Section 7.—Any five members of the Association may nominate any member for any office in writing to the Secretary-Treasurer.

Section 8.—In the event of any office being vacated at any time, the Executive shall appoint a member to fill this vacancy until the next annual election—such persons must be active members in good standing.

ARTICLE 5—COMMITTEES.

Section 1—*Executive Committee.*—The Executive Committee shall consist of the officers of the Association and two members from each graduated class.

Editorial

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SASKATCHEWAN—W. D. Cowan, L.D.S., Regina.

PRINCE EDWARD ISLAND—J. S. Bagnall, D.D.S., L.D.S., Charlottetown.

MANITOBA—M. H. Garvin, D.D.S., L.D.S., Winnipeg.

BRITISH COLUMBIA—H. T. Minogue, D.D.S., L.D.S., Vancouver..

Vol. XXXIII. TORONTO, AUGUST, 1921 No. 8

FALLACY OF MONETARY STANDARDS

There is a tendency to judge the value of a citizen to his country by the amount of money he acquires annually or saves in a lifetime. Such is often a fallacy. This same notion often enters into the judgment of a dentist's professional attainments. "Is Doctor Jones a good dentist?" The answer is: "He made twenty-four thousand dollars last year." By this gauge, Painless Parker is a good dentist, in fact the best on the continent. Because of this standard of judging professional attainments, dentists are induced to exaggerate their incomes among their friends. The public consequently get a notion that dentists are a group of profiteers protected by the State. Dentists who brag about their incomes, never mention their net earnings, except in their income tax returns. The Canadian National Railways, in the same way, make huge sums of money annually, but have a deficit of over seventy millions.

From constant lying about dental incomes for a great number of years, dentistry has placed itself in the class of protected interests for profit. Legislators are wrongfully impressed with the idea

The duties of this committee shall be those usually devolving on such a committee.

Section 2.—Such committees as the Association deem necessary shall be appointed at any regular meeting.

Section 3.—If necessary the President may appoint any special committee that she deems necessary during the current year.

ARTICLE 6—MEETINGS.

Section 1.—There shall be at least one regular meeting of the Association each year. The date and place to be decided by the Association at the previous regular meeting—or by the officers.

Section 2.—Notice of meetings (time and place) shall be sent to the members of the Association by the Secretary-Treasurer not later than one month previous to the date of meeting.

Section 3.—It shall be the duty of the Executive Committee to make necessary preparations for the meetings of the Association.

Section 4.—Five active members shall constitute a quorum.

ARTICLE 7.

Section 1.—Amendments to the constitution may be made by a majority vote at any regular meeting.

Notices of such amendments to be sent to each member at least two weeks previous to such meeting.

ARTICLE 8—DISCIPLINE.

Discipline Committee shall comprise, President, Vice-President, Secretary-Treasurer, who may call in at their discretion the members of the Advisory Council.

Section 2.—Any charges of complaint for unprofessional conduct against any member shall be sent in writing to the Secretary-Treasurer signed by the member making the charges.

Any member arraigned before the Society shall have served upon her, by the Secretary-Treasurer, a copy of the specific charges against her at least one month previous to the time appointed for trial.

Initial fee shall be five dollars and three dollars thereafter each succeeding year.

President and Vice-President to be elected from different year of the graduates of the same institution.

that dentists make great fortunes, and are not inclined to look kindly upon any proposals to curtail the business of the advertising dental quack who poses as the sole protector of the people's pocket book.

It is especially inopportune to propose any changes in dental laws when times are hard, because the quack plays into the hands of the ill-informed and takes advantage of the wrong impression given the public by individuals for personal advantage.

DENTISTRY IN WEST CHINA.

Dr. J. E. Thompson, Chengtu, West China.

The Canadian Methodist Mission is wide-awake and abreast with the times. This is the age of specialties. If a man can do a thing better than anyone else in his community, he is the one sought after no matter what the cost. Dentistry on the mission field is classed as medical missionary work, but it is only a specialty in that department of work. In Canada even dentistry is again subdivided. One is a specialist in extraction, another in X-ray work, another in orthodontia, in crown and bridge work, in pyorrhoea, etc. On the mission field the Missionary Society is conscious of the need of dental work to help on the great cause of Christ in healing the sick.

Vastness of the Opportunity.

Before I left Toronto I practiced within a stone's throw of thirty odd dentists. When I started into work in Chengtu I was the only dentist for a city of half a million people, and had no rival in this great country of West China with a population of about 100,000,000 souls, greater at that time than the United States of America. I worked for patients who came for twenty-four days, and if I had not been here they might have had to go to Shanghai, another twenty-four days away. Even to serve our own missionaries, some of them must travel fourteen days to receive dental attention.

It is gratifying to know that one is indispensable, that no one else can do your work, that no one else is jealous of you, and that your success is not someone else's loss. It is a great satisfaction to be teaching something absolutely new to an old country like China. It will be an untold boon to the civilization of this great people, and especially to far-off Western China, 2,000 miles up the great aorta of China, the Yangtse River.

A Bit of History.

Mr. Lindsay came out in 1907, and started to work in a little operating room built on the end of his verandah. Since then we have built a hospital of six rooms where the two of us worked until Dr. Mullett arrived, when he had to put on another storey to make room for him and our students. As this we are now building a wing to house our students, but this is being used as a dormitory while Dr. Lindsay is on furlough, may be used in the future as a part of the hospital when we get enough land to erect a proper dormitory with suitable playground connected with it.

The Plans for the College.

We have to teach two courses, viz., the Dental College course and that for dental mechanics. The architect has recently completed and sent out the plans for the Medico-Dental College, which we hope to erect in the near future. The course for dental mechanics requires four years, while the College course requires seven years after High School graduation. We have at present about fifteen in the College course and five or six taking the course in dental mechanics. Two in the latter course have graduated and one dentist will graduate, in June of the present year. He will be the first graduate dentist in China, because ours is the only Dental Faculty in all this great land. He will be the pioneer in attempting to keep alive our western scientific dentistry in a situation where dental quacks who have never gone to college are beginning to ply their trade.

Reader, will you not give some help in this problem? We need your aid. How can three men run a college and a hospital? We need you. And there is the Medico-Dental College. That needs your help also. It is vitally important that we secure Chinese dentists to help us and that these first dentists should be men of ability and Christian character. And these can be produced in our Christian Medico-Dental College in Chengtu. We covet for every Canadian dentist a share in this great work.

EDITORIAL NOTES

The Parliament of Great Britain has at last passed an adequate Dental Act. There is a prohibitory law for those not registered, a Board of dentists in control and provision for filling the ranks of the profession in the future.

The Saskatchewan Dental Society, at its annual meeting, May 30-31st and June 1st, subscribed eight hundred and fifteen dollars to the Foundation and Research Fund.

Through some error, the name of Miss Mackle was omitted from the list of dental nurses graduating from the R.C.D.S..

The C. V. Mosby Company has recently issued a catalogue of their publications, including medicine, dentistry pharmacy and nursing.

Port Arthur Board of Education has not closed its dental clinic as appeared in the press. It was a neighboring city that did so.

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Montreal, to be a wonderful dentine obtundant. Unfortunately its ac-

Dominion Dental Journal

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Original Communications

Methods of Overcoming Hyper-Sensitive Dentine

C. W. Steele, D.D.S., L.D.S.

From the dawn of dental history there has been cherished, by the operator and patient alike, an ardent hope that some day methods of performing dental operations without pain would be brought to light. The one dental operation which has caused more pain in the past than all others combined, is that of preparing cavities in vital teeth. Especially is this true in this modern day, when to carry out the basic principles of cavity preparation, as we understand them, it is essential that the cavity have a flat seat with practical parallel walls, that it should possess powers of resistance and retention, and that the outline be carried to areas of immunity—all of which require drilling into sound and usually extremely sensitive dentine.

Authorities differ in regard to the sensitiveness of normal healthy dentine. Barratt states it should be without sensation, and that the source of hyper-sensitive dentine lies in the continued exposure to irritation which develops a pathological condition. Burchard-Inglis says all vital dentine is sensitive—differing in degree in different teeth and in the same tooth at different times. Davis says normal dentine is only slightly sensitive but may become exceedingly hypersensitive when constantly exposed to irritation. Thus the dentine the operator as a rule has to treat is hypersensitive. There are many methods of treating or assisting to overcome this condition, and among the first I shall mention are considerations from the operator's standpoint.

The operator should have himself under control, should know what he intends doing with every instrument he picks up, and moreover, should do it. He can, by always warning his patients of pain, and operating with a light skilled touch, instil into the patients' mind a confidence which will enable them to bear, to a greater extent than usual, the pain of cutting hypersensitive dentine.

In this regard, re gaining the confidence of the patient, it must be borne in mind by the operator that there are several different types of patients. Some require more than usual care and attention, while others need firmness and education, so as to awaken in their minds an interest in what you intend doing for them. This ability to awaken in your patients confidence in you will go a long way toward a successful dental practice, which is built, to no small extent, on your ability to treat hypersensitive dentine successfully.

Another point in hypersensitive dentine treatment is that of instrumentation. Instruments should be sharp and possess a thin cutting blade. A little care in this respect will amply repay the operator and be very much appreciated by the patient. In regard to manner of applying the cutting edge to the dentine always remember that wherever there is a turning in the form of the tooth there will be hypersensitive dentine. If pressure must be made at that point in cutting dentine, make it away from the pulp—that is toward the enamel. Have a definite plan of operation. Use a firm hand, and above all do not cut away dentine, sound or carious, by hacking, chopping, or scraping.

The drugs and remedies used in treating hypersensitive dentine are divided into four general classes. The first of these classes might be headed Physical Agents. Under this class we might include heat, cold, light, and electricity.

Heat and cold when applied to a sensitive cavity, especially when moisture is excluded, will do much toward obtunding the sensitive dentine. The one best method of applying heat is by means of a stream of heated air which is directed into the cavity. There are several well known apparatuses for this purpose on the market. For applying the cold, a stream of compressed air, not heated, is splendid. In addition to the air, heat may be abstracted from a cavity by spraying with some highly volatile material, such as ether or ethyl chlorid. In the application of both heat and cold, care must be taken to avoid primary pain, or otherwise, the object of the application would be defeated. And again, it must be remembered that the application must be continuous, for continued heat, or cold, acts as a sedative, while alternating heat and cold act as a stimulant.

Light and Electricity have recently been advocated as agents for obtunding hypersensitive dentine. In one method light is used by having rays of light, emitted from an electric bulb, colored, by passing through a blue glass. Whether the light acts locally or on the general nervous system by affecting the vision is not known. The electric current has been used to carry certain drugs into the dentine to overcome hypersensitiveness. This method, called cataphoresis, is very unsatisfactory because of the complicated expensive, and uncertain apparatus and the uncertainty of obtaining the desired results.

Another class of obtundents of hypersensitive dentine are those agents which will cauterize the dentinal fibrillae. To this class belong many agents which it is not permissible for us to use owing to the fact that by their chemical action they have a harmful and destructive effect on tooth substance. As in the case of the strong mineral acids they would obtund the hypersensitive dentine certainly, but at the same time they would disorganize the protoplasmic dentinal fibrillae and disintregrate the inorganic structure of the dentine and the enamel. For this reason these remedies are limited, and silver nitrate and zinc chloride are about the only ones that give satisfactory results.

The use of silver nitrate is limited to cavities in the posterior teeth. For use in children's teeth it is admirable. In cases where the cementum is exposed to external influences, or in shallow cavities, extremely sensitive, the use of silver in solid pencil form or in solutions of varying strengths is of great value. It will not only desensitize the dentine but will also retard decay even to the extent of rendering the cavity immune to further decay. The cavity, when silver nitrate is used, should be dry, and the drug exposed to the light for a few moments after application. Its action in darkening the tooth structure renders its use in the anterior part of the mouth not permissible. A solution of common salt, the chemical antidote for silver nitrate, should be on hand when the drug is used, to check its action should any of it happen to get on the mucous membrane of the gums or cheeks or on the epithelium of the face.

Zinc chloride is one of the oldest and best known remedies for hypersensitive dentine. Here again there are contraindications to its use. In deep seat cavities close to the pulp, the application of zinc chloride will cause pain, more or less severe in nature. However its painful action may be modified by the addition of chloroform and alcohol. The chemistry of the action of zinc chloride is that it coagulates albumen and in the process free hydrochloric is liberated. The zinc chloride may be applied on a pledget of cotton and evaporated by blast of warm air from the chip blower, or it may be used in the form of zinc oxychloride cement. After a few days, following the application of the cement, the dentine underlying it may usually be excavated with little or no pain.

The next class of drugs used to overcome sensitiveness of dentine is local anesthetics and anodynes. A local anodyne is an agent which relieves pain already manifesting itself. A local anesthetic is an agent which produces insensibility to pain, and really, according to Long, should be called a local analgesic. Buckley claims that in the careful and wise use of agents of this class will be found the safest and surest road to success. Several of the agents we shall discuss may be used by themselves or in combinations of two or more.

Novocain and Cocain are drugs whch are used as local anesthetics. It should be distinctly understood that cocain hydrochlorid is a general protoplasmic poison, and the reason that its effect is more noticeable on the nerves is that they are the media of sensation and expression. For this reason, and also on account of the danger to the pulp, the practice of forcing solutions of these salts into the dentine or surrounding tissues to obtund hypersensitive dentine is rarely justified. Novocain, while it is claimed to be far less toxic than cocain, yet is a substance which it is unsafe to force into the pulp. The slow absorption method is deemed much preferable. The method usually followed is to place a sixth of a grain of the salt in the cavity, cover with a pledget of cotton soaked in sterile saline solution and seal with temporary stopping.

It should be borne in mind that the operator is rarely, if ever, justified in completely desensitizing a tooth to prepare the most sensitive cavity. Apart from the ill effects on the pulp tissue there is the danger of accidentally exposing the pulp. Without the absence of pain as a guide it is a very simple matter to expose the pulp, in preparing a large cavity; an accident which is absolutely inexcusable. An accurate knowledge of dental anatomy and histology is of great assistance here, but the practise is gradually falling into disuse.

Oil of cloves or phenol, alone or combined, are extremely useful in treating hypersensitive dentine. These agents, when applied to a cavity, either in the liquid form or on a peldget of cotton, and then evaporated by hot air or a hot instrument, will greatly relieve the pain incidental to operating on hypersensitive dentine. Phenol is a coagulator of albumen in addition to possessing valuable analgesic properties. These two remedies also possess antiseptic and disinfecting properties, so in addition to allaying the pain of hypersensitive dentine, they also sterilize the cavity. Another point in their favor is that no injury can reach the pulp, providing, the temperature of the hot air or instrument applied is not too high.

Ethyl chlorid, ether and chloroform are agents which produce intense cold by their rapid volatilization. This will obtund hypersensitive dentine as explained above under ''Cold,,' the one point to be remembered here is not to cause initial pain in the application.

Another method of relieving hypersensitive dentine is by the use of agents administered with the view of reaching the nerves of the pulp through the general system. According to Stevens, general anodynes and general analgesics accomplish their objects by acting upon the perceptive centres of the brain, the afferent paths in the spinal cord, or the peripheral nerve through which the painful impression is transmitted.

In order to perform correct operations on the teeth of certain highly nervous patients, who suffer real or simulated pain, it is sometimes necessary to resort to drugs of this class.

For the purpose of quieting a nervous patient of this class, the bromids of potassium and ammonium at times are extremely useful. Potassium bromid in five grain doses, three times a day, previous to the day of the operation will go far toward removing the fear and dread of the dental operation, and in this manner will help to overcome what would be, otherwise, extremely sensitive dentine.

Nitrous oxid, somnoform and chloroform carried to the first or analgesic stage have all been used and recommended, and in certain cases they have proved to be of value. The danger of the anesthetic and the cumbersome apparatus necessary—especially with nitrous oxide—limit their use to a very great extent.

The methods of overcoming hypersensitive dentine are many, the main ones have been touched on above, but there are others of greater of lesser importance. Buckley recommends the use of desensitizing paste, which he claims to be an absolute specific for hypersensitive dentine. But he also states that—"with confidence, a true running engine, a sharp burr, a dry cavity, a steady hand and a knowledge of what ought to be done in a given case, it is not necessary to use any positive or absolute means of desensitizing the dentine in every case which presents. Yet it must not be forgotten that the preparation of cavities in vital teeth wthout some means of obtunding the dentine more positively than has been done in the past, is generally a painful operation, which is dreaded by most patients."

In conclusion, allow me to quote Dr. G. V. Black—"The treatment of sensitive dentine for the purpose of relieving or limiting the pain in the excavation of cavities has been prominently before the dental profession since the first discovery of anesthesia, and, perhaps for many years before that time. Personally I have watched the progress of this effort through many years of what have been fairly close, careful observation in clinical practise, and always with an intense desire to relieve patients of suffering in the necessary cutting in the preparation of cavities. In all this time; and up to the present, (1908) the results have been so poor, or so uncertain, that as compared with skillful use of well selected cutting instruments, well tempered and always sharp, they have not been a success.

But the relief of suffering is an ever present duty, and the search for this very desirable thing should continue."

Selection of Filling Materials

Read before the Alberta Dental Society, July 21, 1921.

A. E. Webster, D.D.S., M.D., M.D.S.

Marshall in his recent work on Operative Dentistry, says—"In a wise selection of the material to be used in each individual case lies one of the most important elements in the conservation of decayed teeth." With this we all agree. Then follows a description of the physical requirements of a perfect filling and the properties of the materials in common use. None of which meet the requirements stated. There is no attempt to put all the facts together and advise a selection. In the other text books, there is no attempt to discuss the real problem as it presents to the practitioner.

In the current literature there are few authors within the last decade who have attempted a discussion of the subject. The gold inlay and the silicate cement have made writers afraid to tackle the problem in the open. Few wish to acknowledge that they do not make porcelain inlays or malleted gold fillings and, perhaps, others do not wish to admit that the properties of filling materials do not, to any degree, determine the material selected. They accept the materials as they are sold and put them where the manufacturer or patient say. While the writers of books and teachers of dentistry discuss the physical properties of the materials used as a basis of selection, the determining factors in practise are the cost to the patient and the skill of the operator. In the long run it is the cost in energy, time skill and material that determine the selection of the filling material used. If this were not true, the silicate filling would never have taken on nor would gold crowns be made for any teeth.

Dentistry has not yet clearly classified its endeavors. In many ways it is in the same attitude towards itself as blacksmithing or shoemaking—there is nothing hidden or obscure. No conclusions to be arrived at from various sources of information. Dentistry, up to now, has not classified its knowledge. It makes no clear distinction between diagnosis treatment and prognosis. Persons who have no teeth should have teeth, so teeth are made for them. Teeth with cavities should be filled. So they are filled. To know all the methods of treatment of every disease is not enough. It is necessary to know when and where to use them. Dentistry has no right to be called a science until its knowledge is organized and classified or until its members make a diagnosis before beginning treatment.

To make a diagnosis in obscure cases in Dentistry, it is necessary to take into consideration all the underlying factors which might bear upon the case, separating the relevant from the irrelevant. To determine what treatment to apply in a given case of dental carries involves an understanding of the whole mechanism of life, in health and in disease and a comprehension of the laws of physics as well as a knowledge of the properties of the materials used in operation. A dental diagnosis often involves a wider range of information than that required for general diseases because it involves the general knowledge as well as the special.

Several years ago, four essayists wrote a paper or two on the general subject of Dental Economics. Sometime later, a veritable horde of writers, most of them assisted by dental dealers, appeared on the scenes. In the main, their intentions were good but too often they gave the dentist a wrong attitude to his calling. In no other part of dentistry is this better exemplified than in the selection of filling materials. These would-be economists spent all their study and thought on the reasons why dentists should increase the amount of their charges to their patients and for obvious reasons little or no time on how to live, buy and invest economically and safely. Too often the dentist who has been noted for charging the highest fees has died penniless. A more sane economic is now being taught—thanks to the steadying influence of time and the resistance of those who could not be stampeded into bargaining where no bargaining was required. None of them developed accurate time saving methods of practice, but all agreed that the dentist was underpaid and that his charges should be paid for on a time basis only or, in other words, all service should be based on the time spent.

A patient who needs some dental care consults a dentist who follows the teaching of "Brother Bill and his elk." Here is the "line of talk" he gets. "Who sent you to me? What is your business? Where do you do your banking? What references have you? my terms are cash with fifty per cent deposit in advance." Sometimes the getting of this information is left with an assistant or nurse. Everything being satisfactory up to this, the teeth are examined for places in which to put fillings, crowns or bridges or where some time can be spent at $10.00 an hour. Now comes the real dicker. "My time is worth ten dollars an hour; my assistants' time one dollar an hour; my laboratory expert, two dollars an hour. All materials extra, but if it suits you better I will agree to do the whole job using the very best materials for $250.00. If I use amalgam instead of gold inlays or gold fillings and artificial porcelain instead of porcelain it will cost $150.00. The patient chooses the $150.00 job. In such a contract, I leave it with you to determine upon what basis the selection of filling materials is arrived at. It is an absolute waste of time for such a dentist to have studied, physiology, chemistry, pathology or the physical properties of filling materials. He needs them, not because the patient's pocketbook selects the filling materials. Dental Economists have two important levers for extracting money from their patients, the great value of their time and the high cost of platinum, gold and other dental supplies and nothing said about the fact that the service must be economical to the patient. The cost to the patient must bear some relation to the value of that service to him as compared with other necessities of life. A man is a fool who pays ten dollars for a gold crown when he cannot afford clothing to protect himself from being frozen and the dentist who takes such a ten dollars is a knave.

There is an idea in the public mind, no doubt fostered by the dental profession, that there is a great deal of difference between the cost of a gold crown and a large amalgam filling while the difference is about that of a statue made by pouring metal into a mold and modelling one in clay. In one case the gold and the labor cost about three dollars and the amalgam and labor depending upon the skill, at least seven to ten dollars. To be honest, it costs less to put a small occlusal gold filling in a bicuspid or molar than an amalgam, so why charge more for the gold. Dentists, like others, are led by fads and fancies and have not been studying out the economics of their filling operations for themselves and their patients. Oftentimes the most expensive material is the cheapest and best to use.

The purpose for which a filling is made often determines the material to be used. Attachments and abutments are in a special class. Generally speaking, most fillings are inserted to prevent decay whether they be temporary or permanent. In addition they are expected to restore function.

Filling materials may be selected upon two different bases—first, cast in energy, time and material; second, skill, a knowledge of physical properties of the material and teeth as well as the vital phenomena involved. These facts must be weighed against each other giving due prominence to each element before a conclusion is reached.

Energy, time and material should be paid for on the basis of the skilled mechanic and can never command as high a place in service as intellectual attainment. The patient should not expect to pay at so high a rate for the mechanical filling of a tooth as for the knowledge required to select the proper filling. It is the knowledge of the physical properties of the material used and the part of the human body involved as well as skill which is the real financial cost to the patient. If this be true, and few will attempt to contravert it, then the difference in cost between a gold inlay and a silicate filling is not very great. In other words, the real cost to a dentist between one filling and another is very little, if each is inserted with equal care.

The fact that inexpensive plastic materials will remain in the teeth, though very imperfectly inserted, makes it possible to make a great difference in cost in time.

If knowledge and judgment should be paid for at a higher rate than mechanical skill, time and material, then filling materials should be selected, not on the basis of these commodities but on the bases of the physical properties of the materials and the vital phenomena involved.

The vital factors involved in selecting filling materials easily come second in importance to the properties of the materials and tooth structures. The young, the old, the ill, the delicate cannot be treated as the robust adult.

(a) From the standpoint of the *physical endurance required by the patient;* filling materials might well be classified in the following order. Gold foil, amalgam, porcelain, silicate, gold inlay, gutta percha.

(b) On a basis of *endurance in the mouth,* they stand in a different order, gold foil, gold inlay, porcelain inlay, amalgam, gutta percha, silicate.

(c) *Skill required for insertion* about as follows: porcelain inlay, gold foil, amalgam, gold inlay, silicate, gutta percha. *The time required* is governed to some extent by the size. Small cast inlays require about as much time as large ones. Any filling which can be inserted and finished in an hour will take less time than a cast inlay. Time, porcelain inlay, gold foil, gold inlay, silicate, amalgam, gutta percha.

(d) *Appearance,* the order would be—porcelain, silicate, platinum and gold, gutta percha, gold foil or inlay. *Gold Foil*—is indicated in all cavities in the teeth of physically fit people which are not too conspicious and do not require more than one hour for completion. Gold foil is not indicated in the teeth of the young, the old, or those suffering from any grave systemic disorder.

Gold Inlays are indicated in the teeth of the young, the old, the physically unfit, large unexposed cavities, frail teeth, teeth not too bell crowned.

Porcelain Inlays—large exposed cavities in the anterior teeth.

Silicates—exposed cavities in the anterior teeth with no contours or contracts and large cavities in frail teeth for the young, the aged or the decrepit.

Amalgam Silver—unexposed teeth difficult of access of the bell-crowned type.

Amalgam Copper—temporary teeth weak, frail posterior teeth, poorly excavated, no contours.

Gutta Percha—buccal, labial and lingual cavities, not exposed to attrition, no contacts.

Combination Fillings—Gold inlays and porcelain or silicate. Large exposed cavities with strong bite.

To sum up, filling materials should be selected on the basis of the best service to the patient having regard to the physical properties of the filling materials, the age, the mental and the physical condition of the patient, the state of decay of the teeth and the condition of the soft parts of the mouth and their care.

Not on the basis of the size of the patient's bank account or his time or the dentist's whims, likes or dislikes or his skill. Acknowledging, of course, the necessity of inserting fillings as temporary expedients for all classes and for many reasons but not excuses.

Let us then make a selection of filling materials on the basis of their physical properties; the anatomical, physiological, histological, biological and physical properties of the teeth and their environment, the skill of the operator and the cost. The things to be determined are the skill of the operator, the cost, the mouth condition from these.

The dentist knows his own skill and after finding what the patient can give in money and time and determining the condition of the mouth, he selects the material.

A clear conception of the purpose of a filling must guide at first.

Separators and Separating Teeth for Fillings

Unsworth N. Jones, D.D.S., L.D.S.

"Separation for dental operations, by whatever method. has for its object the assistance of the operator in the restoration of tooth forms, and the preservation therewith of healthy interproximal gum tissue." (Johnson)

The importance of this healthy interproximal space and its relation to tooth form and to the health and comfort of the patient was presented to the dental profession by Dr. G. V. Black in a paper read by him to the Odontographic Society of Chicago as published in the "Dental Review" in 1890. Up to that time the proper restoration of proximal surfaces of teeth had been carried out from a purely idealistic and aesthetic point of view; and no particular pains were taken to secure the separation of the teeth necessary for the carrying out of this part of operative procedure.

With the realization of the necessity for this separation came methods for securing it. Those in use to-day have been divided into two classes; slow or "previous" and "immediate."

Separation by the slow method involves the use of some material that may be wedged between the teeth and which expands in the presence of the moisture of the mouth, slowly pressing the teeth apart. Such materials include rubber, cotton, wood, tape, silk or wire ligatures and gutta percha.

Separation by the Immediate method involves the use of a driven wedge or a mechanical appliance at the time of the operative procedure, which forces the teeth apart and holds them there during the operation.

Let us consider first the slow method of separation, the different materials used and their advantages and disadvantages in detail.

Rubber is used in the form of elastic banding material or in strips of varying degrees of thickness and widths supplied by the dental depots. Care must be taken that it is "fresh", as old rubber has no springyness and is worthless. The strip of the thickness and width considered necessary for the case is stretched and drawn up between the contacts of the teeth and cut off labially and lengually with the scissors. It is very useful in starting a separation which may be continued further by some other means. Patients can seldom bear the presence of rubber between the teeth for long, as it has a particularly annoying feeling and may cause severe pain. For patients of nervous type it is best not to use it at all. It bulges towards the gum, due to its contraction lengthwise, and may impinge on the interproximal tissue. It also tends to slip from its place towards the gum, when wet with saliva. Its only advantage lies in the ease with which it can be used by the operator.

Cotton is used considerably and in different ways. Pellets may be packed tightly in proximal cavities, acting as a filling and at the same time a separator. The cotton may be moistened with sandarac to make it less objectionable as a filling material, but this only lessens its practical value from both standpoints. It is better than gutta-percha as a separator, but not as good for filling the cavity of the tooth. It should not be left in the cavity more than a day at a time. A pellet of suitable size may be forced up between the contacts with a thin-bladed instrument and firmly ligatured there with waxed thread. Cotton as bought from the dealers in sheets and known as ''cottonora'' or ''lintine'' may be used. Cotton is one of our best and most frequently used slow separators.

Wood is particularly valuable in cases where we might suspect a cavity on the proximal where the teeth are very close together and the patient is one that cannot stand the application of rubber. In such cases there would be no room for cotton or gutta-percha. With the mechanical separator we at first gain as much space as possible. Then a thin wedge of orange wood is forced between the teeth, by hand pressure or with the mallet and cut off with the pliers. In shaping up the wedge, if we cut a notch all around its base, we can break it off readily and with less jarring than otherwise. The separator is removed and the wooden wedge is left to slowly swell and separate the teeth.

Tape is found of value by many operators. It is not generally used as it comes from the depot, but is first prepared by being dipped in hot beeswax or perhaps chloropercha. Chloropercha is considered better than beeswax because it does not deteriorate so rapidly in the mouth. This prepared tape is forced between the teeth with or without the aid of mechanical separation. It is then cut off with fine gum scissors and left to swell.

Silk ligatures may be used to separate teeth where the contacts are not involved in the decay, by passing the ligature between the teeth below the contacts and tying above the contact. Different size silk may be used, depending on the tightness of the teeth to be separated. Silk ligatures are also used to a considerable extent in ligaturing to arches to provide space between teeth to allow movement in orthodontia.

Wire ligatures are frequently made use of in orthodontia to obtain separation. Soft brass wire is used, of different gauges. It is passed beneath the contacts and twisted on the labial or buccal and the end turned in. It may also be used for ligaturing of teeth to arches. Separation with this wire depends upon its tendency to return to its original form on being stretched. It is a very convenient method to use in the postena teeth for purposes of examination.

Gutta Percha has proven valuable in those cases where cavities in the proximal or proximo-acclusal demand separation for their proper restoration, at the same time acting as a temporary filling. Proximal cavities must first be cleared of all decay in order that infection may not be forced through the dentinal tubulae into the pulp by the pressure of the packed gutta-percha. The gutta-percha is packed in warm by use of a broad faced brimishing instrument. By the application of force as the material hardens, we secure the reciprocal action of the elasticity of the gutta-percha. If we may use a mechanical separator, we can gain an added force of elasticity of more closely packed material. Besides acting in the capacity of a separator and a filling material, gutta-percha tends to force from the cavity the hypertrophied gum tissue that may have grown in from the gingival. In posterior teeth in proximo-occlusal cavities it was formerly the practice to leave the packing over-full so that the occlusion of the teeth would aid in producing pressure for separation. This caused considerable loss of tissue between the teeth and therefore care must be taken to avoid over-pressure. Cavities packed with gutta-percha must be absolutely dry and the rubber dam should be used to insure this dryness. Pure base-plate gutta-percha is the best material to use, although the many prepared sorts are easier to work. They are so elastic, however.

We may now turn to the consideration of the Immediate methods of separation. The simplest of these is the wedge of wood or metal forced between the teeth by hand pressure or the mallet. This method is of little value except maybe to aid the placing of materials for slow separation.

Mechanical separators have been placed on the market to produce a quick and definite separation of the teeth to which they are applied. They are machines on the inclined plane and screw principle to enable us to do more easily that which was formerly done by hand. There are several different mechanical separators on the market at the present time, chief among which, are the "Ivory", the "Elliott" and the "Perry."

The "Ivory" separator is the simplest of these and consists of two antagonizing wedges, the one stationary and the other movable in slots provided for the purpose. The stationary wedge is fitted in the interproximal space on the lingual, between the teeth to be moved. The movable wedge fits in the interproximal space on the labial or buccal. By means of a screw abutting the end of the movable wedge, the two wedges are brought together, resulting in the separation of the teeth by virtue of the opposed inclined planes. This separator has little to recommend it beyond its cheapness. Its chief faults are the presence of the wedges on tooth tissues that may have to be removed in cavity preparation, the presence of the lateral bars of the instrument over the occlusal of teeth, preventing closing for carving of filling for proper articulation, and the inability to use it in posterior positions in the mouth.

"Elliots" separator may be considered better than the "Ivory" in several ways. It also works on the principle of the wedge and screw. In this case both wedges are movable and the screw is placed in such a position that the posterior positions in the mouth may be reached. Here as in the "Ivory", however, we have part of the instrument over the occlusal of the teeth, and wedges in the way of the filling, so that this separator hinders the view of the cavity to a considerable extent in posterior positions. The "Elliott" may be purchased for somewhat less than the "Ivory."

The "Perry" separator or "set" of separators was invented by Dr. S. G. Perry to overcome the faults of such as the above. The original set consisted of four, but it has since been increased to six to enable the operator to cope with all the different sizes and types of teeth. They are considered the best separators on the market today. At first their chief drawback appears to be their expensiveness but their use fully establishes their worth. They have only one fault —a part of the separator prevents closing of the teeth. It may be impossible to make a separator without this fault, but a fault it is nevertheless. They operate on the screw principle alone. The points of pressure on the teeth are as far from the centre in the labio-lingual diameter as it is possible to get them. These points are four in number, two on the labial or buccal and two on the lingual. Of the two points on either side, one is pushing against one tooth and the other is pushing against the adjoining tooth. The separator resembles nothing so much as two pair of ice-tongs. one pair pulling one tooth in one direction and the other pair pulling the adjoining tooth in the opposite direction. Screw bars on the buccal and lingual serve to push these ice-tongs apart. A wrench is supplied to tighten or loosen these bars.

With the set of Perry separators, we shall find that immediate separation can be resorted to in practically all cases where separation is necessary. Only in those cases where the teeth are particularly close to resort to slow separation; and then we must use the mechanical separator to hold that which we have gained, while operating on the tooth.

Separation is necessary;—in examination of teeth for possible carries, in the preparation of cavities for fillings, in the insertion of all proximal fillings, in the proper finishing of proximal restorations, in removing foreign substances from below contacts,etc., and in orthodontia, Mechanical separators may also be found of considerable value to aid in the steadying of a tooth against jar in drilling into the pulp in cases of acute periodonities.

With mechanical separators care must be taken that too great force is not applied at one time. The feeling of tightness by the patient is the sign to stop the screwing up of the instrument. After allowing a little time to elapse, more pressure may be brought to bear, and so on until sufficient space is maintained. With the slow methods of separation there is more danger of permanently injuring the interproximal gum tissue, especially with the continued use of gutta-percha or the like packed against the tissue. Pericementitis may develop from too quick or too prolonged separation. This must be treated same as a pericementitis from any other cause.

Separation of teeth for filling goes hand in hand with proper restoration of contact points. Proper restoration of contacts aids in the prevention of capillary spaces that may cause what we term as "Stasis" of the fluids of the mouth With stasis we may have fermentation reactions and further carries. A complete circle is thus formed. Every operative procedure is but a point in a circle, each being one of a great number of circles that go to make up a comprehensive whole.

Saskatchewan Dental Convention

The following dentists were in attendance at the convention of the Saskatchewan Dental Society in Moose Jaw this year:

G. L. Cameron, R. A. Ross, Swift Current; R. N. Grant, L. J. D. Fasken, C. H. Weicker, R. E. Smale, W. J. Mooney, E. W. Mounteer, G. E. H. DeWitt, H. M. Schweitzer, D. Barnes, A. J. Brett, W. F. Smith, M. R. Parkin, C. W. Parker, Regina; H. E. McKellar, Carlyle; J. E. Fraser, Shaunavon; H. B. Ness, B. C. Walls, Cabri; C. M. Trueman, Craik; W. R. Watchler, Yorkton; V. E. Barnes, Assiniboia; F. K. Switzer, D. J. Ferguson, A. P. Salter, P. W. Winthrope, F. E. Skinner, W. J. Gillies, H. G. Carson, E. C. Campbell, G. B. Somerville, Saskatoon; R. I. Hotham, Strassburg; F. J. Campbell, Winnipeg; L. W. Gemmill, Wolseley; V. Rondeau, Roleau; F. R. Graham, C. Purdon, Estevan; F. G. Moore, Balcarres; J. H. Mitchell, Paul Meminger Watrous; J. F. Gaynor, Bruno; S. Moyer, Rosetown; Oliver Hart, Gull Lake; W. G. Wallace, La Fleche; Archie L. Johnson, W. W. Irwin, Harold Johnson, J. A. Plunkett, J. E. Rundle, B. A. Dickson, S. Nakauchi, S. A. Merkley, H. B. Davies, F. C. Harwood, F. W. Martin, Chas. C. Clermont, A. W. Lane, D. S. Howden, A. E. Chegwin, G. L. Kroshus, S. R. Martin, N. K. Lord, C. W. Skinner, G. T. Brearley, J. Silknitter, Moose Jaw.

Vitamines and the Decalcification of the Hard Parts of the Animal Body

W. H. Hunter, D.D.S., L.D.S.

The object of this essay is to link up if possible the subject of vitamines or accessory food factors with that of the decalcification of the hard parts of the body. In other words to try and find out if vitamines bear any relation to dental caries. This means a minute study of both vitamines and the calcification and decalcification of lime salts. As vitamines can not be isolated and studied by chemical methods, a biological method has to be employed.

The biological method is carried out by the systematic feeding of simplified diets to animals. The results are interpreted on the observations, as to the ability, or failure of the animals to develop normally as the diets are modified. Thus certain accessory food factors can be isolated and the results of their absence from the diet noted.

The animal selected for the experiments was the domestic rat. This was chosen because it was inexpensive and its reproductive periods were very numerous. Thus you could trace the results of a definite food through several generations. In England the guinea pig was used and for that reason there is a slight difference in the results, especially in rickets.

It was decided that the only systematic way of finding out anything definite was to start with simple foods and then add to these until proper growth took place. One of the early experiments was to feed an animal on the diet of wheat. It was found that there was no growth and short life. Then wheat plus purified protein was tried without any results. Then a salt mixture was added and this gave a little growth. After many experiments such as this, it was found that there were three dietary factors of poor quality in the wheat kernel namely protein, salt mixture and growth-promoting fat, that is butter-fat. Lard and vegetable oils were substituted for butter-fat but no growth was produced and it was found that growth could be produced by the feeding of milk, cream, butter and the green foliage of plants. It was found that it could be removed from these substances by alcohol but not by water and it was given the name fat-soluble A.

Osborne and Mendel have shown that butter-fat may have a blast of steam passed through it for two hours and still retain its peculiar growth-promoting properties, due to the presence of the fat-soluble A. Thus it is apparent, that any conditions to which milk fats are liable to be subjected during cooking of foods will not greatly alter its value as a source of fat-soluble A.

On further experimenting it was found that there was another unidentified substance. This was found to be soluble in water and to be obtained from rice polishings, the germ of the wheat and to some extent in the potato and similar foods. To distinguish this factor from the other it was called Water-soluble B. It will withstand boiling for some time without harming it for a dietary factor.

The English research committee have isolated a third factor which has been called the anti-scorbutic factor. This was isolated through the agency of the guinea pig. Such experimentors as Mc Collum were unable to identify this substance as the domestic rat is apparently immune to scurvy. This factor is found in raw cabbage, lemon juice and orange juice, also in fresh milk. It becomes inactive on heating above 100 degrees C. Also prolonged storage and the action of preserving media exert an unfavorable action on the anti-scorbutic power of food stuffs.

Now let us consider the so called deficiency diseases, the cause of these diseases, and the substances which bring about a cure. The disease that is caused by the lack of fat-soluble A shows itself in the form of an eye trouble in the rat and is called zero-phthalmia. If it is allowed to develop the animal dies but if food containing fat-soluble A is given recovery is quickly affected.

The idea should not be entertained that butter-fat is the only food which supplies the fat-soluble A. If the diet contains a liberal amount of milk, eggs, glandular organs or the leaves of plants, it will, if otherwise satisfactorily constituted, prevent the onset of the eye disease. The seeds and seed products, such as wheat flour (bolted), degerminated corn meal, polished rice, starch, the sugars, syrups, tubers, roots,such as the radish, beet, carrot, turnip etc., and also the muscle tissue of animals, such as ham, steak, chops, etc., do not contain enough of the fat-soluble A to be classed as important sources of this dietary essential. The tubers and roots appear to be somewhat richer in it than are the seeds. In the form in which they are ordinarily eaten, as mashed or baked potato, baked sweet potato, fresh or creamed radish cooked carrots, beets or creamed turnips, the water content of the dish as served is so high that the amount of solids eaten is not a very high per cent of the total food supply, and the protective action is correspondingly limited. In America, however, potatoes are seldom eaten without the addition of butter. The vegetable fats and oils such as olive oil, cottonseed oil, peanut and cocoanut oils, although good energy yielding foods, do not furnish this dietary essential. The body fats of animals such as lard, beef fat etc. are not important sources of the fat-soluble A.

Beri-beri is a disease common in the Orient among peo-who limit their diet largely to polished rice and fish. The most striking characteristic is general paralysis and it is frequently referred to especially when produced experimentally in animals, as polyneuritis. It is a form of severe periphical neuritis and may appear in two well marked forms. In the first there is a great wasting anaesthesia of the skin and paralysis of the limbs. In the other the marked symptom is excessive oedema, which may affect the trunk, limbs and extremities such as the gingival.

It was found that foods containing water-soluble B. or the anti-neuritic factor was sufficient to cure beri-beri. Such foods as the rice germ, wheat germ, linseed, yeast, egg-yolk are sufficient to prevent this disease.

Scurvy for many centuries has been regarded as a deficient disease. It has been known that the deprivation of fresh food stuffs caused it and that fresh vegetables and fruits cured it. The food containing the greatest amount of anti-scorbutic factor is fresh cabbage. The symptoms of severe scurvy are very marked. There is a great tenderness and swelling of the joints. The gums and jaws become painful and the teeth loosen. After death the long bones are found to be rarified and frequently show fracture in the neighborhood of the junction of the shaft and epiphysis. These are signs of marked decalcification and are due to the lack of the anti-scorbutic factor.

Rickets has been considered a deficiency disease and to place it on a scientific basis, biological experiments have been carried out on dogs or at least on puppies. This has been known as a disease of childhood or the growing period. For that reason puppies six weeks old were taken from their mothers and placed on a diet which was known to cause rickets. This diet consisted of separated milk, white bread, linseed oil, yeast, orange juice, and NaCl. The orange juice was added to give better growth and to improve the general condition of the animal. From this diet well marked rickets developed within six weeks.

The symptoms of rickets in puppies are as follows. The bones are defectively calcified and the legs bend, the ligaments are loose, swellings at the epiphyses of the bones are obvious and chest deformities occur according to the intensity of the affection. After death the calcium content of the bones is low. It is much easier to prevent rickets in a small and slowly growing puppy than in those of a larger type which grow rapidly. Also it attacks the large well-growing infant and is not found in marasmic babies. Rickets is a disease accompanying growth and it appears the more rapidly the animal grows the more anti-rachitic factor is necessary to keep the growth normal.

After many experiments it was found that the cause of this disease was a lack of a substance contained in butter-fats or its substitute such as cod-liver oil, and when food containing this accessory food factor was added to the diet rickets were prevented. Thus diets play a very important part in rickets. This accessory food factor has been called the anti-rachitic factor. There is a great similarity between the anti-rachitic factor and fat-soluble A. The agreement is sufficiently striking to suggest that the difference may be a matter of technique.

Growth doesn't take place according to the amount of fat-soluble A taken but it is necessary to have a sufficient quantity. The function of this accessory food factor is not so much to stimulate growth as to insure the efficient working and normal development of organs and tissues.

''An abundance of calcium in the diet either in the form found in separated milk or as calcium phosphate will not prevent rickets when the diet is deficient in anti-rachitic factor. Similarly it has been found that a diet otherwise adequate, but containing too little calcium, will not produce rickets, although soft bones deficient in calcium salts are found in the animals. It is, however, probable that a deficient calcium intake associated with deficient anti-rachitic factor intake will bring about more deformities associated with rickets than would occur if the supply of calcium salts were adequate. Lack of these salts must to this extent be an adjuvant factor in the etiology of rickets.''

''May Mellanby has demonstrated the effect of diets deficient in an accessory food factor, probably fat-soluble A, on the calcification of puppies' teeth. Apparently the formation of calcified enamel and the adequate spacing of the teeth in puppies is dependent on an abundance of some such factor. In human beings calcification of the teeth is a much slower process and continues till the eighteenth year. In order to insure perfect calcification of the teeth, therefore, it is necessary that the diet should contain adequate supplies of the accessory food factor up to this time, and a deficiency at any period will be reflected in a corresponding defect in the formation of the teeth. The teeth appear to be most susceptible to this deficiency and the results suggest that the defective teeth of civilized man may depend on some such type of unbalanced diet as has been suggested as the cause of rickets."

It is a known fact that the calcium of the body varies from time to time. Many theories have been advanced as to the cause of this. Some say it is a lack of calcium in the food but in some cases there is an excess of calcium and for some reason the body is not able to utilize it. Then there is the theory that the glands, and especially the ductless glands control the deposition of the calcium salts. There are many papers written on the reason why calcium is laid down at certain periods and why decalcification takes place at other times. They claim that certain ductless glands increase the excretion of calcium and that other glands prohibit it. The thymus gland is considered a calcium absorber and the reproductive organs, a calcium excretor. Thus a balance is held in the body. Anything upsetting this balance causes calcification or decalcification of the hard parts of the body.

The vitamine theory as the cause, or a factor in the control of the calcium elements in the body has not been proved. But it has been shown to have something to do with the proper growth of the body including the bones and the teeth. There is a great field here, open for research and without doubt it will be shown sometime that vitamines are one of the controlling factors in the deposition of calcium salts. They might in themselves control the calcium or they might control it indirectly through the ductless glands. From the experiments that have been carried out in puppies, it has been shown that calcium can not be laid down without the presence of vitamines in the diet. Why a lack of vitamines in the diet does not cause indirectly a decalcification is because there is no new calcium being absorbed and the body to carry on its proper functions must obtain its calcium from the hard structures of the body. Thus the long bones and teeth suffer. This is especially true during pregnancy and lactation where large quantities of calcium are needed.

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Amalgam---Its Manipulation

(*Read before the Alberta Dental Society, July* 21*st,* 1921.)

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Amalgam is the most abused and most largely employed of all dental filling material which the dentist has at his command. It has saved more teeth than any other material, and yet often causes chagrin to both patient and dentist, because of a failure to appreciate its physical properties. Amalgam will tolerate more violation of the principles of cavity preparation, manipulation and insertion with fair results than any other filling material. A gold filling cannot be inserted, nor will it stay in place even for a short time and give satisfactory results, unless a definite unvarying technique is followed, nor will a gold inlay be of any value unless certain definite principles are recognized. Not so with amalgam; it may be made of a silver dollar or seventy-five per cent tin, mixed like putty or like syrup, inserted with the finger or thumb into a cavity having little more than the decay removed, with surprisingly good results in preventing future loss of tooth substance. This very property of tolerating misuse and giving such good results has contributed largely to the profession's failure to study its properties.

To Flagg, Black, Wedlisteadt, Ward, Gray and others must be given the credit for a marked improvement in the modern amalgam filling. At the present time there are two distinct types of dental alloys in use for making amalgam fillings, one of high silver content—65 per cent or more—the other of low silver content. The amalgam of high silver content demands a more exacting technique, but is capable of more accurate results. The low silver content is smooth, sloppy, easy to manipulate, but not capable of ideal results. It belongs to the operator who is satisfied with second-rate results at the least possible expenditure of thought, skill and energy. A high grade amalgam improperly handled will not give as good results as a low grade amalgam improperly handled. In the discussion and the demonstrations which follow, only high grade amalgams will be considered.

Manufacturers of dental alloys are in the habit of sending dentists samples of alloy for them to try, so that they might determine if it would be a suitable one to use in practise. The same is done with cements. The old saying of "The proof of the pudding is in the eating," is no more true in the use of amalgams or cements than in the case of the pudding. The results may be distressing. A pudding that tastes good may be followed by pain, and an amalgam which manipulates easy may be followed by failure, in fact, is almost sure to be. There is a veiled compliment in being chosen by a great dental manufacturer to report on a certain amalgam or cement and have one's name printed among a thousand others who are going to choose the materials to be used by the profession all over the world. It's good business. So far as amalgam is concerned, the only property which a dentist can report on inside of five years is likely to be the most misleading. The amalgam which works up easily and is smooth and plastic to insert, is most likely a weak, contracting, tooth-discoloring material. No dentist is equipped to test amalgams or cements except by the flux of time. I know of no dental college equipped to make a pronouncement on such a matter. It takes trained workers of years of experience, with thousands of dollars of equipment to even approach the subject. It is only within the past year or two that research workers in amalgam have been in a position to know the significance of Black's formula for an alloy and his method of technique. If it has taken over twenty years for research workers and dentists to get a grasp of these things, how can a dentist without any special study and no appliances pronounce on the value of a dental amalgam or cement by a few tests in the mouth, spread over a few weeks or months. It is all d. . . . . . nonsense. As a profession, we must accept the materials as presented to us by reliable dental manufacturers. Any reliable manufacturer of dental filling materials knows that it is all camouflage to send a sample to a dentist to test anything outside of its working properties.

So far as amalgam is concerned, the dentist must accept alloys as they come from the manufacturer. He has little exact knowledge of the contents, the method of manufacture, the size of the granuls, the method of cutting, and the ageing, although these have to do with the setting, strength, expansion or contraction and method of manipulation. The dentist must know how to manipulate the material so that its physical properties will always be alike. He must also know all the vital phenomena connected with placing such metals in human teeth. Where to place an amalgam filling and how to prepare the cavity are subjects of discussion for another time, let us give our attention now to the manipulation, insertion and finishing of an amalgam filling.

The mixing of an amalgam is an art. It is not possible to reduce it to a science, to suit all conditions of constituents, cut or ageing, and yet there are certain parts which should follow rules more or less accurately. The more perfectly the particles of the alloy are brought into contact with the mercury, the better the results. To accomplish this, the finger or thumb in the palm of the hand is not satisfactory. This method was used for the low grade alloys of times past. Trituration in a deep mortar for two to three minutes is necessary and should be followed by at least one to two minutes manipulation in the palm of the hand. A sand glass set at three or five minutes is the best method of determining the time of mixing. Amalgam should be mixed by the assistant. There is a state of plasticity and a certain doughy co-hesion which is reached in a mix that the experienced dentist knows is the best for adaptation, building and carving. Observation of these characteristics and bringing them out is some of the art of mixing amalgam. There must be more mercury added to the alloy for the purpose of mixing than is left after final packing in the cavity. This is sometimes improperly called excess mercury. It is only an excess when left in the final filling, but not an excess in mixing. All alloys do not require the same amount of mercury, nor does the same alloy at different stages of ageing require the same amount of mercury. High grades require 1 to 1.6 while the lower grades require 1 to 1.2. It would seem that there is no positive proportion that can be laid down, but an experienced dentist who is studying and experimenting with amalgams will soon determine what the proportions should be.

The instruments for inserting, packing, finishing and polishing amalgam fillings are legion, each designed to suit some theory, or whim, of the designer. Few are based on the physical properties of the material, the form of the cavity or its position. The chief things to be accomplished in the insertion of an amalgam filling is adaptation and restoration of the automatical form of the tooth. Adaptation is attained by packing the amalgam into the tooth cavity with certain forms of pluggers. The nearer the working point of a plugger conforms to the shape of the cavity to be filled, the better it will acccomplish its purpose. This applies to packing concrete into forms as well as packing amalgam or gold into teeth. The old ball burnisers and convex faced pluggers were adapted for filling the round bottomed cavities of two decades ago. For the flat bottomed cavities of today, flat faced instruments are used exclusively. Black believed he got the best results in adaptation by using serrated faces. Of recent years, smooth face pluggers are being recommended. My personal experience is, a better adaptation can be attained with serrated faces, but, unfortunately, there are no serrated instruments made to fit in the most difficult positions where the matrix joins the proximal wall. From the instruments on the market, a form can be chosen to fit almost any form of cavity. If only it could be borne in mind that amalgam does not spread under the plugger, but must be pushed and packed to every wall, there would be fewer leaky fillings. Amalgam packs like snow; it is only dense where packed and never packs sidewise. A plugger may be sent down through a mass of it, packing only what comes under the face of the plugger, just as the foot packs the snow under its tread.

A word about plasticity. In all average large and proximo-occlusal cavities, the amalgam mass must be extremely plastic during the filling of the first two-third of the cavity to insure adaptation in the use of high grade alloys.

This important requirement is best accomplished by retaining sufficient of the excess mercury (commonly removed during the final mixing or kneading) to be removed after it has served its purpose, by thorough, forceful, and orderly packing.

The excess mercury generally removed during the final mixing is not dangerous to the stability of the filling, because this mercury is a surplus always removed by very ordinary packing force.

The excess mercury that requires our special attention is the final excess; the complete removal of this dangerous excess is absolutely and solely dependent upon thorough, forceful, and orderly condensation.

Decided plasticity and the importance of uniform condensation are two operative details, not previously recognized by the profession as essential to results, that must be accepted if we would make, with reasonable uniformity, non-leaking and stable amalgam fillings.

Tamping is a help. Tamping was designed and has proved to be an aid to uniform condensation. Tamping is done by lightly tapping each piece of amalgam added with the plugger until it spreads as a uniformly thick, dense, and plastic layer in contact with the surrounding walls, and well into the angles, then we may proceed to condense. This procedure provides uniform bulk and plasticity under each thrust of the plugger. Experience shows a material improvement in adaptation when this detail is carried out.

Packing. The packing should be as forcible and thorough as possible and applied with the greatest possible uniformity. The most practical means of accomplishing this in the mouth is by an orderly stepping of the plugger.

Following the detail of tamping, we start the packing of each piece of amalgam with a medium or large plugger at the center of the filling, stepping a little less than its diameter in one direction in a gradually enlarging circle until the cavity walls are reached. The final condensation of each piece of amalgam is done by stepping the cavity walls.

To step the cavity wall we use the smallest plugger (size about twelve by eighteen tenths of a millimeter in diameter), stepping a little less than its long diameter immediately against the walls and well into the angles once around the cavity.

With an orderly packing, the excess mercury is always driven in one direction, outward, where it is at all times free to come to the surface to be removed as it appears.

Packing without order results in irregular condensation. Those parts of the filling thoroughly condensed will contain no excess mercury, and, as a result, will be abundantly strong, the parts of the filling less thoroughly condensed will contain excess mercury, and, as a result the filling will be weak and unstable with corresponding possible defects in adaptation.

With an orderly packing the final excess mercury finds its last lodgment immediately against the cavity walls and particularly in the angles, at which points it will exert its worst effects if allowed to remain. Forcibly stepping the cavity walls is the one procedure that will most certainly remove this dangerous excess and at the same time perfect the adaptation.

In the irregular cavities orderly stepping must be carried out as far as it is practicable.

The operating details of condensation are the most exacting and difficult to acquire because they must be carried out simultaneously. To develop the skill necessary to uniform results, demands our most thoughtful consideration until correct habits have been formed.

As the filling approaches completion, the amalgam should be gradually less plastic, until at the finish, the excess mercury may be pinched out forcibly to the point where it still remains a workable mass.

The cavity should be filled with an excess, covering well all margins, after which the surface should be thoroughly condensed with the largest plugger. This final condensation may be done with pluggers sufficiently large to cover the whole filling, the entire filling should be forcibly compressed with the thumb, holding the amalgam against all margins at the same time for a few moments. This will express the final mercury.

The filling should now remain undisturbed for about three minutes, after which it should be trimmed and carved to correct proximal and occlusal form, as far as this is possible, to be given the final polish at a subsequent sitting.

Editorial

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Vol. XXXIII. TORONTO, SEPTEMBER, 1921 No. 9

Opening of the School of Dentistry of the Royal College of Dental Surgeons

The Dental College opened its regular session September 20, 1921. During the previous three weeks, there had been conducted a post-graduate course in prosthetic Dentistry. The infirmary was open to students who were required to do additional work prior to admission to advanced years. The registration in the Pre-dental year is slightly less than that of last year while the registration in the first year is almost one-third less. This is as might have been expected because of the demand for a higher scholastic training for admission this year than formerly.

There are changes in the requirements for admission to dentistry in Canada that are of interest to the general practitioner. There has been such an insistant demand for a better understanding of the broad principles of health and disease for the dentist that subject after subject has been added until it has become impossible for the dental student to prepare himself in four years without a good education to begin with. To meet this demand the dental schools of Canada are requiring one year of special study after junior matriculation. This study may be taken in Universities, or approved Colleges but in any case must comprise the subjects of English, French, Chemistry, Biology, Physics, Drawing and Clay Modelling. These subjects, if well taught and studied, ought to prepare a student to understand dentistry and medicine as well as handicraft better than those without such a course.

There is a tendency to increase the term in clinical teaching in all dental colleges. Few students have the opportunity of office training or practice and hence must depend upon the college clinic for full training. In times gone by, the Infirmary was open but from nine-thirty to twelve-thirty, later it was open until three or four o'clock in the afternoon. At present it opens at eight-thirty and closes at five-thirty. Besides being open all day long, it now runs for ten months instead of seven not so long ago. Students may escape attending the infirmary clinic during the summer vacation by becoming indentured with a preceptor. Another reason for such an increase in infirmary practice is the demand for a working knowledge of so many more subjects than in former times. It takes no less skill to put in a good amalgam filling than it did in 1900 but in addition to amalgam, gold and porcelain of those days, there are silicates, inlays, prophylaxis, X rays, Minor surgery, oral hygiene, and anaesthetics, besides the demands in prosthetics which have surpassed all other departments.

The American College of Dentists

Statements of Objects and Requirements for Fellowship

Every important profession, science or art has its Academy, Legion, or Court of Honor, to which are elected, or appointed, those who have unselfishly devoted themselves to the advancement of each specific cause. This has been done not only as a just recognition of meritorious services, but also as an example to younger members that they may be encouraged to nobler efforts.

Recognition of the need of a similar influence in dentistry has resulted in the establishment of the American College of Dentists. The object of this College is to bring together in a group of men of outstanding prominence in the profession and by their united efforts in a field that is now covered by any dental agency to endeavor to aid in the advancement of the standards of efficiency of American Dentistry. Some of the aims of the College are to cultivate and encourage the development of a higher type of professional spirit and a keener sense of social responsibility throughout the profession; by precept and example to inculcate higher ideals among the younger element of the profession, and hold forth its Fellowship as a reward to those who faithfully follow such ideals; to stimulate advanced work in dental art, science and literature; and to honor men who have made notable contributions to the advancement of our profession.

The enormously increased responsibilities of the dental profession to humanity on the one hand; the unprecedented opportunities for exploitation, which have resulted in a wave of mercenary practices that threatens to become a public scandal to the everlasting disgrace of American Dentistry, on the other hand, demand that those elements of the profession, whose character, reputation and professional attainments point them out as leaders, should be brought together for the purpose of checking the tide of destructive agencies and of encouraging by every laudible means the cultivation of that high spirit of professional and social responsibility, the wholesome influence of which is so greatly needed.

Inasmuch as there is no title or mark of distinction to differentiate the recent graduates from the practitioner who has devoted many years of faithful effort in the upbuilding of his profession, it is proposed that the Fellowship of the College shall be conferred upon two groups of practitioners, viz.:

> 1. Upon those members of the profession who have been at least ten years engaged in the practice of dentistry, whose efforts during that time have been loyally devoted to its advancement and who are unquestionably looked upon as leaders in their respective communities. Time and effort devoted to teaching in dental schools, to presenting papers, or clinics before dental societies, or to organization and executive work of a constructive character; as well as public services or civic duties having a tendency to enlarge the usefulness or the public appreciation of dentistry, shall be taken into consideration when passing upon candidates of this group.
>
> 2. The conferring of the Fellowship shall be held out as a stimulus to young men to induce them

> to engage more earnestly in those activities which tend to advance dentistry as a profession and for which monetary remuneration must necessarily be sadly out of proportion to the time and effort expended. Devotion to teaching, especially in the non-clinical branches; to research work and to public education, as well as advanced work in the art, science or literature of dentistry, should be greatly encouraged as a consequence of this movement.

The candidate for the Fellowship in either class must be of good moral character, and have a reputation for ethical conduct and professional standing that is unquestioned. Personality, integrity, education, unselfishness, and high professional ideals, as well as freedom from mercenary tendencies, shall be considered in evaluating the qualifications of all candidates for the Fellowship.

Editorial Notes

The Parliament of Great Britain has at last passed an adequate Dental Act. There is a prohibitory law for those not registered, a Board of dentists in control and provision for filling the ranks of the profession in the future.

The Saskatchewan Dental Society, at its annual meeting, May 30-31st and June 1st, subscribed eight hundred and fifteen dollars to the Foundation and Research Fund.

Through some error, the name of Miss Mackle was omitted from the list of dental nurses graduating from the R.C.D.S.

The C. V. Mosby Company has recently issued a catalogue of their publications, including medicine, dentistry, pharmacy and nursing.

Port Arthur Board of Education has not closed its dental clinic as appeared in the press. It was a neighboring city that did so.

The readers of the Dominion Dental Journal doubtless have noticed many errors in type setting printing and statement of fact in the recent issues. For this we crave your indulgence.

The printers strike has made publishing exceedingly difficult in every department. By the next issue we expect everything will be normal again.

DOMINION DENTAL COUNCIL

Professional Examinations, June 1921

Orthodontia

EXAMINER: ROSS THOMAS, D.D.S., D.D.C.

1.—What is normal occlusion? Describe the forces which maintain it.

2.—Describe the tissue changes which take place when a tooth is moved.

3.—Enumerate the uses of the X Ray in Orthodontia.

4.—Describe the peridental membrane. Illustrate.

5.—Classify the human teeth. Quote authority.

6.—What is anchorage? Illustrate.

7.—How would you deal with the case of a young lady patient, age 20, presenting with an inlocked central?

8.—Describe the technique of making bands and their adjustment to the teeth.

9.—State your method of recording a practical case in Orthodontia with a view to being able to check up your prognosis.

10.—What is the future of Orthodontia in modern dentistry and what use are you going to make of it?

Materia Medica and Therapeutics

EXAMINER: WILLIAM P. BRODERICK, D.D.S.

1.—Define: Tincture, Astringent, Incompatibility, Alkaloid, Sedative, Haemostatic, Infection, Alkali, Anesthesia. Sialogoque.

2.—(a) Give derivation and dental use of Nitrous Oxide.
(b) Describe its physiological effect.

3.—Write a prescription containing at least three ingredients—
(a) For a mouth-wash.
(b) For a sedative.

4.—Describe the physiological action of internal medicinal doses of Arsenic, Strychnine, and Nitrite of Amyl, and give the antidotes to these drugs.

5.—Give derivation and dental uses of Cocaine Hydrochlorate, Carbolic Acid, Ether, Tinct. Iodine, Calomel, and Tinct. Aconite.

6.—Give etiology and treatment of Pyrrhoea Alveolaris.

7.—What is an alveolar abscess? Give causes and your treatment.

8.—When is the extraction of teeth the correct procedure in dental practice?
9.—Differentiate between infiltration and conducive anaesthesia and what are the attendant dangers in each case?
10.—Describe your method for removal of a recently exposed pulp.

Prosthetic Dentistry, Crown and Bridgework and Metallurgy

EXAMINER: JOHN W. CLAY, D.D.S.

1.—Describe in detail the taking of upper and lower impressions for edentulous mouths.
2.—Give your technic in detail for replacement of the lower posterior teeth, with the anterior six lower teeth in place.
3.—Describe the investing, heating, and casting process of gold inlay work, showing in full the steps necessary to produce well fitting inlays.
4.—Tell briefly how you would replace the two upper right bicuspid teeth, the adjoining teeth being sound.
5.—Describe the taking of impressions and making models, for a case of fracture of the mandible through the socket of the left cuspid, and also between the right first and second bicuspid.
6.—Give the steps necessary to finish a splint for the case described in question (5).
7.—Describe fully the alloys of gold in use in dentistry.
8.—Discuss the tempering of steel for dental instruments.

Chemistry and Physics

EXAMINER: FENWICK C. BONNELL, D.M.D.

1.—Define: elasticity, ductility, malleability, volatility, acid, base, salt, neutral salt.
2.—(a) What is the difference between assay and analysis?
(b) What chemical bacteria is present in dental caries? Does this product act on the mineral salts of the teeth? If so, how?
(c) Name four organic acids.
3.—(a) Write the chemical name of each of the following:—muriatic acid, quicklime, salt, cinnabar, epsom salts.
(a) Give chemical constituents of (a) dentine; (b) enamel.
(c) State the properties of each constituent mentioned.

10.—(a) Make a dental alloy for filling material.
(b) State the fusing properties of the metals.
(c) Give the requirements of a correct alloy.

Physiology and Histology

EXAMINER: A. W. COGSWELL, M.D., C.M., D.D.S.

1.—What are the functions of blood and lymph?

2.—Describe the respiratory and the systemic circulation of the blood, noting briefly the anatomical and functional differences in each.

3.—What part does the process of mastication play in the digestion of food? Name the digestive ferments found in the alimentary tract.

4.—What comprises the central nervous system? Name the terms used to designate impulses going to and from the central nervous system.

5.—Describe the salivary glands.

6.—Of how many layers is the blastodermic layer composed: name them giving one example of a tissue formed from each.

7.—Describe the formation of the common dental germ or dental almina and the special dental germ..

8.—Describe the structural difference between modulated and non-modulated nerve fibres.

Jurisprudence and Ethics

EXAMINER: H. G. DUNBAR, D.D.S.

1.—Define: Latent injury; Suit; Negligence; Specialist; Minor; Statutes; Compensation; Injunction.

2.—Define Malpractice and discuss the following factors where a suit for malpractice is entered:

Negligence on the part of the operator.
Contributory negligence.
Accidental injury.
Injuries where services are gratuitous.
Error of judgment.

3.—(a) What distinguishes a profession from a trade?
(b) In the order of their importance give the objects of legislation to regulate the practice of dentistry.

4.—Outline the legal status of the dentist with regard to the administration of general anaesthetics and the writing of prescriptions.

4.—(a) Give the properties and state the uses of:

1. Metallic Zinc.
2. Gold.
3. Silver.
4. Tin.

(b) Discuss the generation of galvanic currents between gold and silver fillings.

(c) What does the term "caret" signify? How do you find the "caret"?

5.—Give the formula and properties of:

(a) Hydrochloric Acid.
(b) Sulphuric Acid.
(c) Sulphurous Acid.
(d) Phosphoric Acid.
(e) Carbolic Acid.
(f) Nitric Acid.

6.—(a) Name some of the more malleable metals.

(b) Mention the two groups into which the metals are divided.

(c) What metal is the best conductor of heat?

(d) State the requisite of metals used for dies.

7.—(a) What chemical forces have a tendency to decompose compound substances? Give a test.

(b) 1. What is meant by specific gravity?
2. Describe a hydrometer.
3. What is water of crystallization?
4. What is meant by specific heat of a metal?

(c) What is freezing? State Fahrenheit freezing point of 1. Water; 2. Alcohol; 3. Mercury.

8.—(a) Name the chemical constituents of saliva.

(b) Mention the halogens and state in what respects they exhibit marked similarity.

9.—(a) What are ferments? Describe briefly the process of fermentation.

(b) Describe the chemical action when (a) iron rusts; (b) wood burns; (c) silver is tarnished by coal gas.

(c) Form complete equations of the following:—

1. $AgNO3 + HCL$.
2. $PbC12 + H2SO4$.
3. $CaO + H2O$.
4. $H2SO4 + NaNO3$.
5. $MnO2 + 4HCL$.

5.—Define Ethics and discuss your choice between a "time" and "Service" basis for estimating fees for services.

6.—Outline your method of handling Syphilitics, intoxicated and colored patients.

7.—Do you consider the dentist should have the M.D. degree, and discuss the advantages of Dominion registration?

8.—Outline the characteristics of a successful dentist.

Medicine and Surgery

EXAMINER: DR. C. N. ABBOTT.

1.—What are the most important symptoms found in well developed cases of Emphysema?

2.—In the diagnosis of acute general peritonitis, what conditions are most apt to be mistaken for this disease?

3.—Discuss Anthritis Deformans as a chronic infection or as of Neurotic origin.

4.—Describe Etiology and Treatment of acute osteomyelitis.

5.—Briefly describe the effects of depraved oral conditions upon nutrition; also specific results.

6.—Describe Etiology, Symptoms and Treatment of Ludwigs Angina.

7.—Mention five conditions which are the usual types seen in early carcinoma of the tongue.

8.—Describe minutely the operation for entering the antrum through canine fossa with removal of polypus.

9.—Discuss the immunization theory as applied to oral infections.

10.—Describe the symptoms and physical signs found in dilatation of the heart.

Pathology and Bacteriology

EXAMINER: DR. D. N. ROSS, M.D., L.D.S.

1.—Define and give minutely the pathology of inflammation.

2.—Define a wound: name the different varieties of wounds and give pathology of the healing in each variety.

3.—State the pathological changes that occur in:

(1) Carcinoma.
(2) Aneurism.
(3) Caries of bone.
(4) Pulp nodules.
(5) A neglected exposed pulp.

4.—Name and describe the various forms of stomatitis.

5.—What manifestations of syphilis are to be looked for in the mouth?

6.—Describe the process of bacterial development. How are bacteria destroyed?

7.—Describe:
(1) Acquired Immunity.
(2) Parasite.
(3) Septicemia.
(4) Mixed infection.
(5) Streptococci.

8.—Mention the possible channels of infection in the human body and tell how nature combats the organism in each case.

Anatomy

EXAMINER C. H. WEICKER, D. D. S.

1.—A. What nerves supply the tongue?
B. What nerves supply the muscles of expression?

2.—Give the origin, insertion, action and nerve supply of the following muscles:
(a) Depressor Anguli Oris.
(b) Buccinator.
(c) Platysma Myoides.

3.—Give the origin, course and distribution of the Internal Maxillary artery.

4.—Describe fully the Seventh or Facial nerve.

5.—Describe and give the articulators of the Malar bone.

6.—Mention the bones that form the Septum of the nose.

7.—Describe the Tempero-Mandibular joint.

8.—Tell all you know about the Spheno-Maxillary fossa.

Operative Dentistry

EXAMINER: W. A. BLACK, M.A., D.D.S.

1.—(a) At what age are all the deciduous teeth normally in position in the mouth?
(b) Explain what conditions in the growing child effect the normal structure of the permanent teeth.

2.—Give reasons why the deciduous teeth should be kept healthy and in place until the permanent teeth are ready to replace them.

3.—Distinguish between salivary and serumal calculus. Give causes for the recession of the gums.

4.—How would you diagnose and treat
(a) Acute pulpitis.
(b) Incipient abscess.

5.—Explain what is meant by the following terms:
''Extension for prevention;'' ''Periodontal''; or ''Calcic abscess''; ''dead tooth''; ''Erosion'' and ''Abrasion.''

6.—What are the differences in the preparation of cavities for gold Inlays, Amalgam fillings and Enamel fillings?

7.—What do you understand by traumatic occlusion? What are its causes and what may be its result?

8.—What instructions would you give your patients regarding daily care of the teeth?

9.—Discuss the subject of general infections in relation to what effect they may have on the teeth, and what effect may focal infections have on the general health.

10.—What considerations would guide you in your decision whether you would attempt to treat and save a tooth with an apical infection or not?

Anaesthetics

EXAMINER: DR. W. B. STEED.

1.—Discuss the examination and preparation of a patient prior to the administration of a General Anaesthetic.

2.—Enumerate the different pathological conditions which if present, would determine your choice of General Anaesthetic Agent, and state reasons.

3.—What is the state of contraction or dilation of the pupils in full surgical anaesthesia under:
(a) Nitrous Oxide.
(b) Ether.
(c) Chloroform.

4.—Describe in detail one method of artificial respiration.

5.—(a) Enumerate the qualifications of an ideal local anaesthetic solution.

(b) What local, and what general effects are produced by the presence of adrenalinechloride in a local anaesthetic solution.

6.—Describe minutely the technique of blocking the inferior dental and lingual nerves.

7.—Name, and give technique of two methods of anaesthetising the superior first and second bicuspids for cavity preparation, and for extraction.

8.—What are hypo, iso., and hyper tonic solutions, and describe their respective effects on tissue cells?

News Notes

We are in receipt of two books published by the American Medical Association entitled "New and Nonofficial Remedies," "The Propaganda for reform in proprietary Medicines." These contain most interesting reading. They show how the proprietary medicines are put over to the public, and the fight the association is making to have only the truth told. Dental proprietary medicines would bear similar investigation and publicity.

A new edition of C. S. Case's work on the technics and principles of Dental Orthopedia and Prosthetic Correction of cleft palate is out. The latter portion on cleft palate is new and a distinct contribution to dental literature.

In verifying a dental diagnosis don't forget the value of X-Ray but at the same time don't forget that at best what is seen is a shadow of the thing. An opinion is based on the shadow not on the substance.

Dr. George Wood Clapp was the winner of the handicap golf trophy at the annual tournament of the National Dental Golf Association at Milwaukee.

The frontispiece of the August issue of the Dental Cosmos is a picture of the late C. N. Thompson, Chicago.

The dental mechanics of Austria have been granted full rights as dentists and are now allowed to treat pathological conditions of the mouth and teeth. Is this not significant in view of the dental Mechanics' organizations and hygienists of America. Every dental register has to become loaded up with the uneducated as soon as there is a scarcity of the fully qualified.

FOR SALE.

Dental Office and Practice—all new equipment. Town of four thousand population. Apply to Dr. N. W. Haynes, Carleton Place, Ontario.

Dominion Dental Journal

Vol. XXXIII. TORONTO, OCTOBER, 1921. No. 10

Original Communications

The Ability of Dentistry to Cope with the Diseases Coming Under Its Care

A. E. Webster, M.D.S., D.D.S., M.D.

For convenience of discussion, the causes of dental diseases or affections of the teeth and mouth may be divided into four classes. Those due to (1) failures in development, (2) Dental caries or tooth decay, (3) diseases of the investing tissues or pyorrhea, (4) traumatisms or accidents.

Under the group of diseases which are caused by failures in development may be classed, (1) Defects in the structure of tooth tissues, (2) Deformities of the teeth, (3) Failures in eruption of the teeth, (4) Deformities of the jaws, (5) Irregularities of the teeth, (6) Defects and deformities of the soft tissues of the mouth E.g. cleft palate, excesses of soft tissue, saddle arch, attached trenum, gladular circulatory and cellular defects, as well as Malrelationship in size and form between the upper and lower jaws.

Dental Defects

The foregoing deformities and defects have far reaching consequences both locally and remotely.

Defects in the structure of dental tissues are the chief predisposing causes of dental decay with all its train of consequences. Teeth improperly formed are more liable to decay than normal teeth and besides nearly always become diseased around the necks and are finally lost by pyorrhea with its possibility of systemic affections. It is from the failures in normal eruptions of the teeth that come that whole group of affections known as diseases of dentation. Every Mother knows the meaning of too late or too early exception of the baby's teeth. She knows too well the wakeful nights, the disturbed rest, the indigestions and the disturbance of the nervous system. The adult as well too often knows the consequences of the impacted wisdom tooth, and the psychiatrist well knows of the hundreds of young men and women who have been sent to asylums for the insane because of pressure from unerupted and diseased teeth. What is more repulsive or distressing than the facial deformities due to malformed jaws and protuding or irregular teeth? The unsightliness of these deformities is only part of the misfortune. Along with and consequent upon such conditions is malnutrition, stunted growth, failure to masticate food with all its consequence local and general, dental caries, diseases of the gums, deformities and diseases of the nose and throat as well as the predisposition to all acute infectious diseases and especially tuberculosis, Malformations of the jaws, teeth and soft parts of the mouth with all their distressing appearances and inconveniences and defects in function are not to be compared with the effect on health and longevity. It is natural to ask if something cannot be done to prevent such misfortunes and if not prevent to ameliorate or at all events to smooth the way of the physically defective and prevent the remote consequences on body and mind. The answer is that the dental profession can prevent the great majority of the deformity of the teeth and jaws as well as relieve the sufferer from defects of speech which are caused by defects of the mouth and prevent the diseases consequent upon such deformities and defects. The dentist can find and remove the unerupted impacted or diseased teeth which may be the cause of systemic and nervous symptoms of insanity and overcome the results of the structural defects of the tooth tissues and thus prevent dental caries. If he has watchful care over the child he can prevent and relieve the consequence of almost any defect or deformity of the mouth, jaws and teeth.

DENTAL CARIES

"Decay of the teeth is not a mere chance unfortunate disability of the day: It is the most urgent and gravest of all diseases of our time, a more serious national scourge than cancer or consumption....and it is the main precursor and cause of unfitness and disease in general."

F. Treby King, C.M.G., M.R.C.S., Public Health, England.

Decay of the teeth is the most widespread disease known to the human race. It is a disease of man only and occurs most frequently in the youth of the highly civilized races. Though it is known to be caused by bacteria there is no antiseptic, disinfectant or poison that can be safely used in the mouth that will prevent its onset or stay its progress.

The discoveries of research laboratories and the practising dentists of this and other countries have shown that while decay of the teeth is almost universal in civilized countries the remote consequences in economic loss, disease, suffering and death are beyond comprehension by the general public. Decay of the teeth is insidious in its onset, its progress is slow and its symptoms slight at first. In its early stages there may be twinges of pain from excessive cold, heat, acids or sweets and perhaps later inconvenience in mastication and even acute pain. However unpleasant the latter may be it is the infection and death of the pulp and disease of the tissues beyond the end of the root that makes decay of the teeth one of the most far reaching diseases of mankind. It is not the pain in the jaw caused by a diseased tooth which is vitally important but it is the systemic consequences of an infection which may not cause pain at all. Such diseases as rheumatism, skin affections, heart troubles, high blood pressure, indigestion and anaemia are often the indirect results of dental caries.

Diet

Again the question comes, is there no preventive or relief? The answer is that decay of the teeth can be prevented or so minimized that its remote results rarely occur. So that this ideal condition might obtain, mothers, children and adults should eat a balanced ration.

There are few questions of greater moment calling for attention of the health and educational authorities of this country than this one of diet, both in relation to the teeth and to the general nutrition of the child. Sir George Newman, K. C. B., Chief Medical Officer of the University of London, England. It has been shown by many experiments and many observations in private dental practise that those who eat excessively of starches and sugars have decayed teeth in excess of those who do not use an excess of such substances. Besides this, strong healthy jaws, teeth and supporting tissues can only be developed by proper use as in vigorous chewing of normally hard foods.

Oral Prophylaxis

Oral hygiene—the hygiene of the mouth—there is not one single thing more important to the public in the whole range of hygiene than that.

Sir William Osler

The next great preventive measure for tooth decay is frequent friction of all the surfaces of the teeth so as to remove or disturb the growths of bacteria which cause the beginnings of decay. This can be partially done by the patient but in its completeness is must be done by a dentist.

If decay has once begun the only treatment and the only means of preventing other decays is to remove the diseased tissue and fill the cavity.

The chief outward defense against infection of the human being is the skin, and in the alimentary canal it is the mucous membrane. Once these defences are broken dependence for resistance must be upon minute resisting bodies in the circulating systems. If then a tooth decays until its central portion, the pulp, has been reached, the main defence has been broken through. The central part of the tooth has a canal filled with vital tissue which communicates directly with the general circulation of the body. When this tissue, known as the pulp, becomes infected, or dies, which it usually does if diseased, it being in contact with the blood stream deep in the centre of the jaw bone, it has a direct opportunity to cause general systemic diseases.

When a tooth becomes so decayed that there is severe pain it is a diseased tooth and all the diseased portions should be removed. This may involve the removal of the whole tooth, or perhaps only the pulp. It takes very fine discrimination on the part of a skilled dentist to determine which method of practice should be followed.

The extent of the loss of the crown of the tooth by decay or accident is not a determining cause for extraction. The determining factor is,—can the root be kept in the jaw free from disease? The crown can be readily restored by filling, or an artificial crown. Experience has taught the dental profession that a tooth root which has lost its pulp some years since, has been the seat of an acute infection in which the soft tissues have swollen extensively, has a dark or dead gray colour, or has not been bitten upon for some time, is usually so infected that its further retention is doubtful even in a healthy person and should be removed if there are any indications of general symptoms that might be caused by focal infection or if there is a family history of chronic disease though there are no symptoms present.

Notwithstanding all the advances which have been made in the mechanical side of dentistry during the past few years it has been proven beyond doubt that there are many teeth of such a form and position in the mouth that the pulp cannot be all removed from there nor the roots filled with any substance which will keep bacteria out. Dependence in a large measure must be placed in nature's internal defences, even when all the dead pulp has been removed and the best possible mechanical defence made. Thus it would seem reasonable that before a dentist should undertake to destroy a dental pulp, or treat an infected root canal, he should take into consideration the family history, the personal history and the dental history of the patient, the anatomical form and position of the tooth and its value to the patient.

Dental skill today is sufficient to destroy the vitality of a dental pulp, remove it and fill the root canal of any of the normal single rooted anterior teeth, and most of the bicuspids, but very few of the molars sufficiently well to prevent infection or systemic diseases in all cases. But in cases of long standing infection the chances of success are remote. After the best possible operations are made, dependence must be placed on the internal defences of the patient to maintain a healthy condition in the face of a foreign substance in contact with vital tissue at the end of the root of the tooth.

Diseases of the Gums

More human teeth are disabled and lost by diseases of the gums than by all other causes. It is not fully understood what the essential or primary causes are. Some authorities look upon chronic diseases of the gums as due to filth, others believe them to be in some way associated with systems conditions.

A baby's mouth is never too young or too small to be open to the attacks of micro-organisms, consequently there is a great deal of suffering as the result of infantile mouth conditions.

True, unhealthy mouth conditions are more rare now in this locality than they were formerly; the probable reason being mothers and nurses are better educated and understand sanitation more clearly than did the mothers and nurses of a half century ago.

Many diseases at that time were attributed to teething and as a consequence were neglected, and babies were not protected from unclean rubber nipples, rings, etc. There are unhealthy conditions of the mouth extending sometimes to the face, the result of teething, which a dentist will recognize and successfully treat, but they are few in comparison with the infections of the mucous membrane of the mouth and intestinal tract. Mild stimulation combined with asepsis are the weapons with which to operate.

As the child grows older and the teeth develop, inflammations of that part of the gum which lies next to the teeth called the gingiva—may become inflamed even before the permanent teeth are erupted. This condition must be eliminated by careful treatment at the hands of the dentist.

Sometimes, however, in children and very often in adults, an inflammation of the gingiva is not the result of any local irritant; but is an indication of some constitutional disturbance. In such a case, the dentist will call in the assistance of a physician; as in the case of influenza, severe abdominal disturbances, etc,—Lead and other poisonings very often show first in the gum but are not as disastrous as phosphorous and arsenic poisonings, which are now more rare than formerly, as a result of greater care on the part of factory owners.

What may be considered as a product of the late War and commonly called "Trench Mouth," is not the bugbear it was, when less well known, a dentist can now, quite successfully treat it. But we must not lose sight of the fact that it is easily transferred from one patient to another, or that one may be a carrier of it, though not a sufferer from it.

Apthus ulcers are simple to treat and not in themselves serious, though the cause may be very obscure.

Leukoplakia, Syphilis, and Cancrumoris, when appearing in the mouth, are not successfully treated locally and must be consigned to the realm of general medicine and Surgery.

Epulis is a tumiefied growth of the gums and is successfully treated only by removal in entirety and by removing also the part of the bone to which it is attached.

Salivery Calculus or Tartar is not a disease and can be readily removed by any dentist, through his instructions and with the co-operation of the patient, it may be almost if not entirely eliminated.

Periodontaclasia—commonly and erroneously called Pyorrhoea, under certain stipulations which follow, can be quite successfully treated by the dentist with the co-operation of the patient.

All forms of periodontoclasia are essentially reactions against injury, therefore treatment must be directed towards the relief of the causes of inflammation.

The identification of the irritants causing the inflammation must naturally precede the treatment which consists primarily of the removal of the irritants and secondarily of the stimulation of the regenerative forces of the periodontal tissues.

A plan which may be safely employed in the management of cases is summarized as follows:—
Examination of the case.

This consists of a complete record of the condition of the hard and soft tissues entered upon an adequate oral examination chart. (For example, the examination chart adopted by the Academy). This is supplemented by radiographs and plaster models of the jaws prepared for the purpose of studying the occlusion and those conditions requiring artificial restorations.

Diagnosis of the case.

This consists of determining the types of disease present and their etiology.

Physical diagnosis, if indicated, should be made by a physician.

Treatment.

Removal of irritation.

The first consideration is the relief of congestion which will permit the awakening of the forces of repair and thus render more effective the subsequent curetment. Remove first the irritant which has been found by the diagnosis to be the fundamental etiological factor. Follow this initial step by the removal of each of the other irritants acting as an etiological factor.

Traumatic occlusion, if present, should receive primary consideration.

Scaling of the teeth.

By scaling is meant the removal of all concretions from the visible tooth surfaces and from those surfaces covered by the free or marginal gingivae, or their equivalent.

Placing of temporary splints where required.

Polishing of the visible tooth surfaces.

Extraction of teeth showing hopeless periapical or periodontal infection.

Instruction to the patient in the personal care of the mouth.

Curetment of denuded root surfaces.

Prophylactic treatment at required intervals.

CONSIDERATION OF CONDITIONS INFLUENCING DIAGNOSIS, TREATMENT AND PROGNOSIS

The question of determining which teeth should be regarded as within the range of successful treatment and which should be eliminated, is one to which periodontists have given much thoughtful attention. Two phases of this problem present themselves for solution in diagnosing a case; one dealing with those teeth, either pulpless or having vital pulps, which are afflicted with superlative periodontoclasia only; and the other dealing with the pulpless teeth exhibiting radiographic evidence of rarefaction at the apices of their roots, together with some degree of suppurative periodontoclasia.

In both classes of cases in order to determine as accurately as possible which teeth have non-vital pulps it is necessary at the time of the examination of the case to test all those teeth showing discoloration, those having large fillings and those presenting suspicious clinical symptoms. The test may be made by the use of the electric current, generated by the Feradic battery or the Violet Ray apparatus, by the application of hot air, heated gutta percha pellets or ice. The electric current is not always reliable but reaction to it is comparatively dependable.

See report of Committee on "The Tooth Brush and Methods of Cleaning the Teeth."

All crowned teeth and teeth which test non-vital as to their pulps, as well as those which for any clinical reason require it, should be radiographed.

In the first class of cases the clinical experience of periodontists has resulted in the following conclusions:—

1. Single rooted teeth having neither apical infection nor absorption but having lost alveolar support are not savable. Generally speaking one third of the original peridental membrane should be intact if these teeth are to be successfully treated.

2. Multi-rooted teeth having neither apical infection nor absorption, but having lost the alveolar process in the bifurcation of the roots are not, usually, savable teeth. These teeth should possess, as a general rule, at least one third of the original peridental membrane and should have the alveolar process in the bifurcations of the roots intact to be successfully treated. . .

In special cases of upper molars where one root is severely involved and the other two are not, the tooth may be rendered useful and compatable with the tissues, following proper root and canal filling, by the amputation of the hopeless root together with a proportionate amount of the crown surface, with occlusion balanced on remaining roots.

In the second class of cases where radiographs show definite areas of rarefaction at the apices of tooth roots it is usually considered that it is to the advantage of the health of the patient to have the teeth extracted and the socket curetted. This is particularly true where clinical symptoms, either local or systemic, give indications of infections.

In all those cases where repeated radiographs show a rarefied area at the apex of the root and where the root canals cannot be thoroughly opened or filled the teeth should be extracted.

Radiographs, of course, do not determine whether or not infection is present in a radiolucent area, neither do they always show rarefied areas actually existing, but in the great majority of cases the evidence presented by radiographs is considered sufficiently convincing to influence diagnosis.

Where radiographs of pulpless teeth show an absence of apical rarefaction, the teeth should not be extracted unless the root canals cannot be properly filled, and unless there are local or metastatic symptoms which warrant such a procedure.

It is held that a pulpless, septic tooth is unfavorable to periodontal regeneration, but a pulpless tooth having a non-septic apical cementum and dentine is favorable to such regeneration. Regeneration of periodontal tissue about pulpless teeth is dependant largely upon the freedom of the teeth from infection or the products of infection.

The co-operation of a competent physician in all cases where physical diagnosis and treatment are required, is desired and requested by periodontists who are not equipped by training or with facilities for diagnosing systemic conditions. The aim of all periodontic treatment is not only the restoration of the investing tissues of the teeth to a healthy state, but also the improvement of the general health of the patient, and to this latter end the co-operation of the physician is, in many cases, imperative.

It is constantly noted, however, that many cases presenting any of these conditions respond to careful periodontal treatment almost, if not quite, as readily and completely as those not exhibiting these conditions.

The primary focus of metastic disease may be either in a periapical infection of pulpal origin or in a periodontal infection.

Lowered resistance of periodontal tissues to disease is caused by the action of two or more etiological factors, those most commonly present being any of the local conditions causing irritation and favoring the collection of debris, with its attendant bacterial growth, and, traumatic occlusion. The bacteria responsible for the infection are secondary etiological factors and determine the type of disease. Invasion of the periodontal tissues by normal mouth flora depends wholly upon tissue condition.

It is believed that in ninety per cent of cases the lack of tissue resistance can be corrected by removing the local causes of irritation and inflammation, that is, by eliminating the most commonly present primary and secondary factors, such as traumatic occlusion and local conditions favoring the collection of debris, detritus and microorganisms.

The greatest safeguards to tissue resistance against microorganic infections are, high tissue vitality, absence of local irritants, and the reduction of the microorganisms to the fewest possible number.

ACCIDENTS OF THE MOUTH INVOLVING TEETH AND JAWS

As life grows more complex and strenuous, generation after generation, so accidents become more and more frequent. It strains every effort of physics, surgery and medicine to keep pace with the new and varied forms of accidents which occur to mankind. The highchair, the baby carriage, the go-cart, the kiddie car, the bicycle, the catapult, the drinking fountain, the baseball and bat, the hockey stick, the lacrosse stick have brought a series of accidents to the mouths and teeth of children not known a century ago. Machine shops, elevators, motor cars, aeroplanes, projectiles and explosives have increased accidents to the mouths and teeth of adults beyond that of decades ago. Accidents due to drunkenness which were in the past the cause of a large percentage will be undoubtedly reduced.

From the causes indicated above children sustain fractures of the teeth involving the enamel, both enamel and dirliur and often the pulp as well, or perhaps the whole tooth is dislodged as well as part of the bone and some of the soft tissues. In accidents of this kind it is often very difficult to determine what is the wisest procedure to follow. Generally speaking when only the enamel is involved polishing of the rough edges is all that is necessary and if the dintim is included only a cement protection is needed until it is known if the pulp will die. If the pulp is but slightly exposed it may be protected or capped especially in the young. many cases are on record when teeth have been dislodged and remained from their sockets for hours or days and after proper treatment been replaced and gave years of excellent service. If the teeth and the supporting bone and the overlying soft tissues have been driven into wrong positions by the force of impact they can often be at once molded back to their normal places and there supported by a splint and later become re-attached.

The more violent accidents to the jaws and teeth in civil life which cause fractures of the bones of the face, can be successfully put to place and held there by internal and external supports or splints. The accidents of wounds of military life are mostly different from civil life in as much as the projectile carries away a part of the bones or supporting structures. By the ingenuity of dental and plastic surgery combined, the bony or

(*Concluded on Page* 400)

British Columbia Dentistry Act

SHORT TITLE.

1. This Act may be cited as the "Dentistry Act."

COLLEGE OF DENTAL SURGEONS.

2. (1). In and for the Province of British Columbia there shall be a College of Dental Surgeons (hereinafter called "the College").

(2). The membership of the said College shall be composed of all persons who on or before the date of the coming into force of this Act were by law authorized to practise the profession of dentistry or dental surgery in the Province, and all such persons shall be registered as members of the College without any application or other proceeding; and also of all persons who may hereafter become and be registered members of the College under and by virtue of this Act: Provided, however, that no person entitled to be registered as a member of the College under this section, who has not actively engaged in the practice of dentistry or dental surgery for a period of fifteen years prior to the date of the enactment of this Act, shall not commence the practice of dentistry or dental surgery in the Province of British Columbia without the written consent of the Council, and the Council may require any such person to submit to the same examination as provided for persons applying to be registered as members of the College under and by virtue of section 22, subsection (*b*), hereof.

3. The members of the College are hereby constituted a body corporate under the name of "The College of Dental Surgeons of British Columbia," and shall have perpetual succession and a common seal, with the power to acquire, hold, and dispose of chattel property and real estate for the purposes of this Act, and to sue and be sued.

COUNCIL.

4. (1). There shall be a Council of the College elected in the manner provided for in this Act, and referred to in this Act as "the Council." R.S. 1911, c. 64, s. 4.

(2). The Council of the College shall call in the month of June of each and every year a meeting of the College, at which meeting shall be discussed all matters pertaining to the welfare of the College, and at which meeting of the College shall be submitted a statement of the finances of the College by the officer having charge thereof as hereinafter provided.

5. The number of persons to be elected as members of the Council shall be seven, to be elected from the following dental electoral

districts as herein set out: Provided always that the number of persons to be elected may be increased from time to time by a two-thirds vote of the Council.

6. The Province shall be divided into five dental electoral districts, to be known as Districts No. 1, No. 2, No. 3, No. 4, and No. 5. District No. 1 shall comprise the Provincial Electoral Districts of Victoria City, Saanich, Esquimalt, Cowichan, the Islands, Newcastle, Nanaimo, Alberni, Comox, Atlin, Prince Rupert, and Omineca, and shall be entitled to elect two members. District No. 2 shall comprise the Provincial Electoral Districts of Delta, Chilliwack, Dewdney, Richmond, South Vancouver, and New Westminster, and shall be entitled to elect one member. District No. 3 shall comprise the Provincial Electoral Districts of Vancouver City and North Vancouver, and shall be entitled to elect two members. District No. 4 shall comprise the Provincial Electoral Districts of Cariboo, Fort George, Lilloet, Yale, Kamloops, North Okanagan, South Okanagan, Similkameen, Columbia, and Revelstoke, and shall be entitled to elect one member. District No. 5 shall comprise the Provincial Electoral Districts of Slocan, Trail, Nelson, Rossland, Kalso, Fernie, Cranbrook, Grand Forks, and Greenwood, and shall be entitled to elect one member.

7. The number and boundaries of the said dental electoral districts, and the number of the representatives apportioned to each, may be changed from time to time by a two-thirds vote of the Council.

8. Elections for members of the Council shall, with respect to the manner of the taking of votes thereat and the conduct and regulation, be carried on and held pursuant to the provisions of the First Schedule to this Act. At all elections retiring members of the Council shall be eligible for re-election: Provided always that every member of the College shall, subject to the provisions of section 9 of this Act, be entitled to vote at every election. The election for members of the Council shall be held on the third Monday in April in every year: Provided that members of the Council of the College of Dental Surgeons of British Columbia appointed pursuant to chapter 64 of the "Revised Statutes of British Columbia, 1911," and amending Acts shall be deemed to be members of the Council pursuant to this Act until the third Monday in April, 1918.

9. The persons entitled to vote under this Act at any election shall all be duly registered members of the College: Provided that no member of the College who is in arrear for his annual fees or any part thereof shall be entitled to vote at elections for members of the Council or be eligible for election as a member of the Council.

10. In the case of any doubt or dispute as to the legality of the election of any member of the Council, it shall be lawful for the Council to hold and decide who is the legally elected member of the Council; and the person whom the Council decides to have been elected shall be deemed to be the member legally elected; and if such election be found to have been illegal, the Council shall have power to order a new election.

OFFICERS.

11. The Council shall annually appoint from amongst themselves a president, a registrar, a treasurer, and other officers as may from time to time be necessary for the working of this Act, who shall hold office during the pleasure of the Council.

12. The Council shall appoint annually from amongst its members an executive committee to take cognizance of and action upon all such matters as shall be delegated to it by the Council, or such as may require immediate action, interference, or attention between the adjournment of the Council and its next meeting, and all such acts shall be valid only until the next ensuing meeting of the Council; but such committee shall have no power to alter, repeal, or suspend any by-law of the Council.

MEETINGS.

13. The Council shall make rules and regulations as to the time and place of meeting of the Council and the modes of summoning meetings of the Council, and it shall be lawful for the president thereof or, in the event of his absence or death, for the registrar to summon the Council to meet at such time and place as to him may seem fit, by circular or letter to be mailed to each member.

14. At least one week's notice of a meeting of such Council shall be given, and in the event of the absence of the president from any meeting, some other member, to be chosen from among the members present, shall act as president.

15. Four members of the Council shall form a quorum, and all acts of the Council shall be decided by the majority of the members present.

16. The president or the chairman of any meeting shall have the right to give a casting-vote in addition to the vote which he is entitled to as a member of the Council.

17. There shall be paid to the members of the Council fees for attendance (not exceeding ten dollars per day) and travelling expenses (not exceeding ten cents per mile one way).

REGISTRAR, REGISTER, FEES.

18. The Council shall cause to be kept, by an officer appointed by them and to be called "the registrar," a book or register to be

known as "The Register of the Members of the College of Dental Surgeons of British Columbia," and hereinafter in this Act called "the register," in which shall be entered and registered the name of every person who becomes a member of the College under and by virtue of the provisions of this Act. Such register may be in the form in the Second Schedule to this Act.

19. Only those persons whose names are entered and registered in the register shall be qualified and permitted to practise dentistry and dental surgery in the Province except as hereinafter provided.

20. The register and all other books of record of the Council shall at all times be open and subject to inspection by any member of the College.

21. The registrar shall, immediately upon his appointment, without the payment of any fee whatever, enter and register in the register the name of every person who on the date of the coming into force of this Act was entitled to membership in the College under and by virtue of section 2 of this Act. The registrar shall report annually to the Lieutenant-Governor in Council all proceedings of the Council.

REGISTRATION OF MEMBERS.

22. The following persons shall, upon payment of all fees required to be paid for that purpose, be entitled to be registered as members of the College and to receive a certificate of licence to practise dentistry or dental surgery in the Province, which licence shall be in the form prescribed by the Council:—

(*a.*) Any person who has, prior to the date of the coming into force of this Act, been articled to and employed and instructed as a student for the full term of service called for by such articles by any person who is entitled under the provisions of section 2 of this Act to registration as a member of the College, or who hereafter may become so articled to and employed and instructed as a student by a member of the College, and who shall have served the term and shall have passed the examinations required by the Council and complied with the rules and regulations of the Council:

(*b.*) Any person who has passed the final examination prescribed by the Council for persons applying for registration as members of the College under this Act, and who is a graduate of any school or college of dentistry duly established, equipped, and maintained in any part of the Dominion, having authority under and by virtue of any Act or Statute of the Parliament of Canada or the Legislative Assembly of any Province in Canada to grant degrees evidencing proficiency in and conferring the right to practise the profession of dentistry and dental surgery, and who produces his certificate of graduation evidencing his degree, together with such evidence as the Council may require that his degree has not been revoked or cancelled: Provided that the Council may, in the case of any person who has practised dentistry in any Province of Canada in conformity with the law of any such Province for a period of ten years, waive all or any of such requirements relating to his preliminary education and register such person as a member of the College:

(*c.*) Any person who has passed the final examination prescribed by the Council for persons applying for registration as members of the College under this Act, and who is a graduate of any school or college in the United Kingdom, or in any of the British Dominions beyond the seas other than the Dominion of Canada, having authority under and by virtue of any Act or Statute of the Parliament of the United Kingdom, or of the Parliament or Legislative Assembly of any British Dominion aforesaid, to grant degrees evidencing proficiency in and conferring the right to practise the profession of dentistry and dental surgery, and who produces his certificate of graduation evidencing his degree, together with such evidence as the Council may require that his degree has not been revoked or cancelled:

(*d.*) Any person who has passed the final examination prescribed by the Council for persons applying for registration as members of the College under this Act, and who is a graduate of any duly established, equipped, and maintained school or college of dentistry in any State of the United States, having authority under and by virtue of any Act, law, or Statute of such State to grant degrees evidencing proficiency in and conferring the right to practise the profession of dentistry or dental surgery, and who also produces his certificate of graduation evidencing such degree, together with such evidence as the Council may require that his degree has not been revoked or cancelled, and who also produces a certificate from the Superintendent of Education that the candidate has a standing equal to that required for second-class non-professional certificates of teachers:

(*e.*) (i.) The Council shall have power to appoint one or more members of the College as representatives of the College upon the Dominion Dental Council, and the Council shall, so long as represented on the said Council, accept the certificate of qualification of the said Dominion Dental Council as a qualification sufficient without further examination for the granting to the holder thereof of a licence to practise dentistry in the Province: Provided such certificate is accompanied by satisfactory evidence of the good moral character of the applicant:

(ii.) If the certificate of the Dominion Dental Council of Canada issued to a practitioner who has procured a licence under the provisions of this section is cancelled for any cause by the said Council, the licence of such practitioner to practise in this Province shall be null and void, and the Council shall remove the name of such person from the register.

23. No person shall be entitled to be registered under this Act as a member of the College unless and until such person shall satisfy the Council that he is a person of good character.

24. No person shall be registered under this Act as a member of the College unless such person be of the full age of twenty-one years.

POWERS OF COUNCIL.

25. The Council shall from time to time make such rules, regulations, and by-laws as may be necessary for the better guidance, government, discipline, and regulation of the said Council and of the profession of dentistry and for the carrying-out of this Act: Provided that such rules, regulations, and by-laws shall, before coming into force, be approved by the Lieutenant-Governor in Council.

26. Every rule and regulation made by the Council under and by virtue of any power by this Act conferred shall be deemed to have been duly and effectually made if entered in a minute-book of the Council as part of the minutes of a meeting of the Council signed by the chairman of such meeting; and every such rule and regulation may be proved in any Court of justice in the Province by the production of a copy of such rule or regulation purporting to be certified under the hand of of the registrar and the seal of the College.

27. The Council shall also have authority to make rules and regulations respecting the preliminary examination and the matriculation of all students entering upon the study of the profession of dentistry and dental surgery in the Province, and to provide in lieu of such matriculation or preliminary examination any other satisfactory examination, and to fix and determine the period, not exceeding five years, for which such students shall be articled to and employed under a member of the College, and to prescribe the studies and course of instruction of such students, the intermediate and final examinations to be passed by such students to entitle them to registration under this Act, and to make all such regulations and rules as may be necessary for the conduct of such examinations: Provided always, however, that any student who on the seventh day of March, 1908, was regularly articled to any person duly licensed to practise the profession of dentistry or dental surgery in the Province, and in active practice, shall be deemed to have matriculated or passed the preliminary examination and to have been duly articled and employed under this Act since the day of the date of his articles.

28. The matriculation or preliminary examination provided in the last preceding section shall be passed by all persons applying to be admitted as students of dentistry or dental surgery prior to becoming articled to any member of the College: Provided that a certificate from any university in the Dominion established by authority of any Act of the Parliament of Canada or of the Legislative Assembly of any Province of Canada, that the applicant has passed the matriculation examination prescribed by the curriculum of such university, or a certificate from the Department of Education that the candidate has a standing equal to that required for matriculation to the University of British Columbia, shall be accepted in lieu of the preliminary examination or matriculation required by this Act.

29. The Council shall, subject to the approval of the Lieutenant-Governor in Council, have power to make all regulations necessary for the conduct of the examinations of candidates applying for a licence under the provisions of section 22 of this Act, and to appoint such times and places therefor, as they may deem fit: Provided, however, that examinations shall be held at least twice in each year; and provided that any person shall be entitled to a special examination at any time in all or any subjects upon payment of an examination fee not exceeding the sum of two hundred and fifty dollars for the privilege of such special examination.

30. Every person who is desirous of taking the final examina-

tion of the Council shall, pursuant to the rules of the Council, notify the registrar of the Council, and shall pay to the Council the fees required for such examination, and furnish the Council with evidence of his qualifications as provided in section 22 hereof, at least ten days prior to date of such examinations. 1917, c. 16, s. 30.

(2.) Any member of the Allied Forces as defined by the "Allied Forces Exemption Act, 1918," who at the time he became a member of the Allied Forces was a resident of the Province, and who was then or is now entitled to be registered as a member of the College, except for the fact that he has not passed the final examination or paid the fees required by this Act, shall, on his written application to the Council, be registered as a member of the College without being required to take the final examination or pay any fee. 1919, c. 18, s. 2.

31. The Council shall constitute a Board of Examiners whose duties shall be to examine all candidates for examination and to report to the Provincial Secretary the results of the examinations. Forthwith after the holding of any examinations held under the provisions of this Act, each and every examiner shall forward to the Provincial Secretary the examination papers submitted to each and every candidate at such examination, together with the answers of the respective candidates thereto, and shall attach thereto a certified copy of his report and the marks awarded to each candidate on each subject on such examination; said documents shall remain on file in the office of the Provincial Secretary, and shall be open to inspection by all persons interested therein during the regular office hours.

32. There shall be payable to the College by students and persons applying for a licence the following fees:—

(*a.*) For each registration as a student, ten dollars:
(*b.*) For each intermediate examination, thirty dollars:
(*c.*) For each final examination, fifty dollars:
(*d.*) For registration as member of the College, ten dollars:
(*e.*) For each permit or renewal thereof, five dollars.

33. It shall be the duty of the registrar to keep his register correct in accordance with this Act and the rules and regulations of the Council, and he shall from time to time make the necessary alterations in the addresses or qualifications of the persons registered under this Act and issue to each member of the College a certificate of registration in the form prescribed by the Council, and perform such other duties as may be imposed upon him by the Council.

34. The Council may from time to time, as occasion may re-

quire, make rules and regulations consistent with this Act for regulating the register to be kept under this Act, and the certificates of registration to be issued to members.

35. Every person registered under this Act who obtains a higher degree, or any qualification additional to the qualification in respect of which he has been registered, shall be entitled to have such higher degree or additional qualification inserted in the register, in substitution for or in addition to the degree or qualification previously registered, on the payment of such fees as the Council may appoint.

36. No degree or qualification shall be entered on the register, either on the first registration or by way of addition to a registered name, unless the registrar be satisfied by proper evidence that the applicant is duly entitled; and any appeal from the decision of the registrar on any matter or question of fact or evidence may be decided by the Council.

FORFEITURE OF RIGHT OF REGISTRATION—ERASURE OF NAMES.

37. Any entry in the register proved to the satisfaction of the Council to have been fraudulently or incorrectly made may be erased from the register by an order of the Council or of the executive committee.

38. If any person procure or cause to be procured his registration under this Act by means of any false or fraudulent representations or declaration, either verbally or in writing, it shall be lawful for the registrar, upon the receipt of sufficient evidence of the falsity or fraudulent character of the said representations or declaration, and upon order of the Council or of the executive committee, to erase the name of such person from the register, and to make known the fact and cause of such erasure by notice to be published in the Gazette; and after such notice has appeared, the person whose name has been erased as aforesaid shall cease to be a member of the College and shall cease to enjoy any of the privileges enjoyed or conferred by registration under this Act.

39. Any member of the College who shall be convicted in any Court of an indictable offence shall thereby, in the discretion of the Council, forfeit the right to registration, and upon an order of the Council his name shall be erased from the register by the registrar; and in case a person known to have been convicted of an indictable offence present himself for registration, the registrar shall have power to refuse such registration unless and until the Council, after investigation, shall direct registration to be made.

40. (1.) A charge of infamous or unprofessional conduct against any persons registered under this Act may be laid before a

Judge of the Supreme Court by way of originating summons for adjudication thereon, and the matter of fees, rules, procedure, and appeals therefrom shall be such as are prescribed by the Supreme Court Rules applicable thereto.

(2.) The person so charged shall be liable to a fine not exceeding five hundred dollars nor less than twenty-five dollars, to have his licence suspended, or to have his name erased from the register of the College.

(3.) The Council shall comply with the order of such Judge, and shall cause its officers to perform such acts as are necessary to conform to and comply with any order so made.

41. The Council may, and upon application of any three members shall, cause inquiry to be made into matters arising under sections 38, 39, and 40, and on proof of the satisfaction of the Council or of the executive committee of such fraudulent or incorrect entry in the register, or of such false or fraudulent registration, or of such conviction of an indictable offence, shall order such entry or the name of such person to be erased from the register by the registrar, and erasure shall be forthwith made pursuant to such order: Provided that the name of a person shall not be erased from the register on account of his adopting or refraining from adopting the practice of any particular theory of dentistry or dental surgery, nor on account of a conviction for a political offence out of His Majesty's dominions, nor on account of a conviction for an offence which, though within the provisions of this Act, ought not, in the opinion of the Council or the committee, either from the trivial nature of the offence or from the circumstances under which it was committed, to disqualify a person from practising the profession of dentistry or dental surgery.

42. The Council or executive committee may order to be paid out of the funds of the College such costs as may seem just to any person against whom any complaint has been made, which, when finally determined, is found to have been frivolous and vexatious.

43. Where the Council or the executive committee shall order the erasure from the register of the name of any person or of any other entry, the name of that person or that entry shall not be again entered on the register, except by the direction of the Council, or by an order of the Supreme Court or a Judge thereof.

44. The Council may order the registrar to restore to the register any name or entry erased therefrom either without fee, or on payment of such fee, not exceeding the registration fee, as the Council may from time to time fix, and the registrar shall restore

such name or entry according to the terms of the order of the Council.

45. The executive committee of the Council shall always have all the powers of the Council for the purposes of sections 38, 39, 40, and 41 of this Act, in addition to all other powers by this Act conferred upon or vested in the executive committee.

46. The executive committee shall meet from time to time for the dispatch of business, and, subject to this Act and of any regulations from time to time made by the Council, may regulate the summoning, notice, place, management, and adjournment of such meetings, the appointment of a chairman, the mode of deciding questions, and generally the transaction and management of business, including the quorum; and if there be a quorum the committee may act, notwithstanding any vacancy in its membership. In case of any vacancy, the committee may appoint a member of the College to fill the vacancy until the next meeting of the Council.

47. The executive committee may, for the purpose of the execution of the duties of the committee under this Act, employ at the expense of the Council such legal or other assessor or assistant as the committee may think necessary or proper; and any person whose status or conduct is the subject of inquiry shall also have the right to be represented by counsel.

48. At least one week before the first meeting of the committee to be held for taking evidence or otherwise ascertaining facts, a notice shall be served upon the person whose status or conduct is the subject of inquiry, and such notice shall embody a copy of the charges made against him, or a statement of the subject-matter of the inquiry, and shall also specify the time and place of such meeting. The testimony of witnesses shall be taken under oath, which the chairman, or acting-chairman, of the committee is hereby authorized to administer, and there shall be full right to cross-examine all witnesses called, and to call evidence in defence and reply. In the event of the non-attendance of the person whose status or conduct is the subject of such inquiry, the committee may, upon proof of the personal service of the notice aforesaid in accordance with the provisions of this section, which proof of service may be by statutory declaration, proceed with the subject-matter of the inquiry in his absence, and make their report of the facts without further notice to such person.

49. The Council or any person interested in the proceedings of any such inquiry may make application to the Registrar of the Supreme Court to seal a writ or writs of subpœna for the attendance of any witness or witnesses and for the production of books,

papers, and documents by such witness or witnesses at such inquiry in form similar to that prescribed by Supreme Court Rules, and such writ or writs of subpœna shall have the same force and effect as though issued out of the Supreme Court, and the fees therefor and the rules governing the same shall be such as are in force in the Supreme Court.

50. Witnesses summoned to any such inquiry shall be entitled to the like allowances as witnesses attending upon the trial of an action in the Supreme Court.

51. Any person who has failed to pass an examination, or whose name has been ordered to be erased from the register, or who feels himself aggrieved or is affected by any order of the Council or executive committee, or any decision of the Board of Examiners, may appeal from such order, finding, action, or decision to any Judge of the Supreme Court at any time within six months from the date of such order, finding, action, or decision, or the publication thereof; the said Judge thereof may, upon the hearing of such appeal, which may be analogous to appeals to the County Court under "Summary Convictions Act," make such order confirming or reversing, in whole or in part, or varying the order, finding, action, or decision appealed from, or directing further inquiries by the committee or Council into the facts of the case, and as to costs, as to the said Judge thereof shall seem right in the premises. An appeal shall lie from the decision of such Judge to the Court of Appeal, and the Court of Appeal shall have all the powers which may by this Act be exercised either by the committee, or Council, or Examiners, or the Judge appealed from.

52. An appeal under the last preceding section may be by summons served upon the registrar or the president of the Council to show cause, and shall be founded upon a copy of the proceedings before the Council or executive committee, the evidence taken, the report (if any), and the order of the Council or committee in the matter, certified by the registrar; and the registrar shall, upon the request of any person desiring to appeal, furnish to any such person a certified copy of all proceedings, reports, orders, and papers upon which the Council or executive committee has acted in making the order complained of.

53. In all cases where proof of registration under this Act is required to be made, the production of the last annual list published in the Gazette as hereinafter provided, or of a certificate bearing a date subsequent to the issue of the said Gazette containing said annual list, showing that the person or persons therein named is or are duly registered, certified under the hand of the registrar and

seal of the College for the time being, shall be sufficient evidence of such registration in lieu of the production of the original register; and any such certificate purporting to be signed by any person in the capacity of registrar shall be prima facie evidence that such person is such registrar, without any proof of his signature or of his being in fact such registrar: Provided always that the evidence herein aforesaid may be displaced by any certificate of the registrar under seal of the College, showing the fact of erasure of any name or suspension or revocation of any licence to practice.

54. There shall be due and payable annually by every member of the College actually engaged in the practice of the profession of dentistry or dental surgery to the College, on the first Monday in March in each year, the sum of ten dollars, but the Council may by a rule provide that such amount may be reduced to a sum not exceeding five dollars, if paid on or before the first Monday in February, and each member of the College so engaged in practice shall obtain from the registrar annually a certificate under the seal of the College of the same date, stating his qualifications to practise, and that the certificate is in force for one year from its date, and it shall be the duty of the registrar, upon payment of such fee, to issue the certificate. Such certificate may be in the following form:—

> COLLEGE OF DENTAL SURGEONS OF BRITISH COLUMBIA.
>
> ANNUAL CERTIFICATE NO.
>
> This is to certify that has paid to the College of Dental Surgeons of British Columbia, under the provisions of the "Dentistry Act," the sum of ten dollars, and that the said is hereby entitled to practise the profession of dentistry and dental surgery in the Province of British Columbia for one year from the date hereof.
>
> Dated , 191 .
>
> ....
>
> REGISTRAR.

55. Subject to the provisions of the last preceding section, if any member of the College, either in his own name or as a member of any firm, practises the profession of dentistry or dental surgery in the Province without having taken out a certificate for the current year, as directed by the last preceding section of this Act, he shall for every such offence forfeit and pay the sum of fifty dollars to the College, which sum may be recovered by the College in any Court of competent jurisdiction; and he may also be suspended by the Council from membership in the College and from practice of the profession of dentistry and dental surgery for any period not

exceeding six months, or until the fee payable for such certificate has been duly paid, and the further sum of fifty dollars forfeited as aforesaid has been duly paid, unless the Council sees fit to waive the whole or any part of such payment.

56. All fees and moneys payable under this Act shall be the property of the College and shall be received and accounted for by the treasurer or other officer deputed by the Council in that behalf, and the said fees and moneys shall be disbursed and appropriated by him under the direction of the Council in payment of the expenses and outgoings of the College.

Publication of the Annual List.

57. On the first Tuesday in the month of March in each year the registrar, under the direction of the Council, shall prepare and shall certify under his hand and the seal of the College a list setting forth in alphabetical order the names, and giving also the place of residence, of all the members of the College who have paid their annual fees for the then current year and have had issued to them annual certificates; and shall, so soon as may be thereafter and at the cost of the College, cause a true copy of such list, certified as aforesaid, to be published in one issue of the Gazette; and production of a copy of said Gazette containing such list shall be prima facie evidence of the right of every person named in such list to practise the profession of dentistry or dental surgery in the Province for one year from the date of such list, and the absence of the name of any person from such list shall be prima facie evidence that such person is not registered or entitled to practise under this Act.

58. In case any member of the College complains to the registrar or to the Council of the improper omission or insertion of any name in the list, it shall be the duty of the registrar forthwith to examine into the complaint, and rectify such error, if any there be; and in case any person is dissatisfied with any decision of the registrar or of the Council in the premises, he may appeal to a Judge of the Supreme Court in a summary way, whose decision shall be final, and such list shall remain or be amended in accordance with such decision.

Effect of Registration or Non-registration.

59. Every person registered and holding an unexpired annual certificate under this Act shall be entitled to practise the profession of dentistry and dental surgery in the Province, and to demand and recover from any person or patient in any Court of law, with full costs of suit, reasonable charges for professional aid, advice, and

services and the cost of any medicines, materials, or appliances rendered or supplied by him to such person or patient.

60. Any person entitled to be registered under this Act, but who neglects or omits to be so registered or to take out an annual certificate in every year, shall not be entitled to any of the rights or privileges conferred by registration under this Act, so long as such neglect or omission continues; and he shall be liable to all the penalties imposed by this Act, or by any other Act in force against unqualified or unregistered practitioners.

61. It shall not be lawful for any person not registered under this Act, and not holding an unexpired annual certificate or permit as hereinafter provided, to practise the profession of dentistry or dental surgery in the Province for hire, gain, or hope of reward.

62. Any person shall be deemed to be practising the profession of dentistry within the meaning of this Act who, for salary, reward, or commission paid or to be paid by an employer to him, or for fee, money, or compensation paid or to be paid to either himself, an employer, or any other person, shall, directly or indirectly, perform or administer any operation or treatment, or any part of any operation or treatment of any kind, of, for, or upon the teeth or tooth, jaws or jaw, or the malposition thereof, of any person: Provided alwas that this section shall not interfere with the privileges conferred upon physicians and surgeons by any Act relating to the practice of medicine and surgery in this Province, nor with the privileges heretofore conferred upon registered students, nor with the ordinary vending or calling of a druggist.

63. No person shall be entitled to recover any charge in any Court of law for any aid, advice, or assistance rendered by him or for attendance, or for the performance of any operation, or for any medicine or materials that he may have prescribed or supplied as a dentist or dental surgeon, unless he be registered under this Act and be the holder of an unexpired annual certificate under this Act.

64. Every person who shall be registered under this Act shall be exempt, if he so desire, from serving on all juries and inquests whatsoever.

65. No duly registered member of the College shall be liable in any action for negligence or malpractice by reason of professional services requested or rendered, unless such action be commenced within six months from the date when, in the matter complained of, such professional services were terminated.

PROVISIONS FOR PUBLIC PROTECTION

66. The right by this Act conferred upon a member of the College holding an annual unexpired certificate to practise the pro-

fession of dentistry or dental surgery in the Province is a personal right, and every such member so practising shall at his office or place of practice, by a proper sign, conspicuously placed, set forth his proper name, so that all persons applying to him for professional aid and treatment may have certainty of his identity and means of availing themselves of the protective provisions of this Act:

(*a.*) Nothing herein shall be deemed or construed to prevent any partnership between two or more duly registered and licensed members of the College, provided that the proper name of each member of the partnership shall at all times be conspicuously displayed in the manner aforesaid:

(*b.*) Nothing herein shall be deemed or construed to prevent a duly licensed and registered member of the College entering the employ of any other duly registered and licensed member of the College actually engaged in practising the profession of dentistry and dental surgery in the Province:

(*c.*) Notwithstanding anything herein contained, a graduate of dentistry of any university, college, or school of dentistry recognized from time to time by the Council, or other person entitled to take examination as provided for in section 22, shall, on personally presenting his diploma or other qualifications and testimony of good character and conduct to the Council, and has also produced evidence of preliminary education equivalent to that required by subsection (*d*) of section 22 of this Act, receive a permit to practise as an operator in dental surgery and as a practitioner in dentistry in the office of and under the supervision of a member of the College therein named, and such permit shall not be transferable except by consent of the said member of the College, but such assistant shall not be required to pay any fees to the College. Such permit shall be in Form E of the Third Schedule to this Act, and shall continue in force for a period of one year from the date of issue thereof, and at the discretion of the Council may from time to time be renewed for additional periods not exceeding one year. Such permits shall be subject to revocation if the holder violates any of the provisions of this Act or the rules and regulations of the College: Provided that no member of the College may have more than four assistants practising under permit under his supervision at any one time unless the Council so authorizes.

67. The Council may at their discretion, and upon the request of the Provincial Secretary, of Mayor or Reeve in Council of any town or municipality not at present being served by any dentist, grant a permit to practise dentistry for one year, on payment of the prescribed examination fee, to any of the following:—

(*a.*) Holders of Dominion Dental Council certificates:

(*b.*) Graduates of any recognized dental school in the British dominions:

(*c.*) Graduates of any recognized dental school or college in the United States of America, which school or college is a member of the National Association of Dental Faculties, such graduates being required to produce evidence of preliminary education, as provided by subsection (*d.*) of section 22. Such permit shall be subject to revocation if the holder violates any of the provisions of this Act.

68. Nothing in this Act shall prevent any duly indentured and registered student of dentistry from receiving clinical instruction and practice under the personal supervision of a member of the College, but no student shall engage in or perform any dental work, or any work in the nature of dental surgery, except in the presence of and under the direct personal supervision of a member of the College.

69. No student shall be placed in charge of any dental office or place where dental work is carried on, and no member of the College shall leave or permit his office of place to be left in charge of any student to perform any dental operation during the absence of his principal..

70. No member of the College shall, in the practice of the profession of dentistry or dental surgery, use any trade-name, or designation, or corporate name, or any distinguishing name, for any premises in which he carries on the practice of his profession, but every such member shall for all purposes in connection with his profession use his own proper name.

71. No Company incorporated, registered, or licensed under any of the Acts of the Province regulating or respecting joint-stock companies shall carry on, or attempt or purport to carry on, the practice of the profession of dentistry or dental surgery in the Province, and no member of the College shall assist or enter the employ of any such company to carry on, or attempt or purport to carry on, such practice in anywise howsoever.

72. (1.) Every student shall present himself for examination forthwith upon the determination of the period of service prescribed as a condition precedent to every such examination, and in the event of any student neglecting or being unable from any cause to so present himself for examination he shall forthwith make application to the Council for an extension of the term of his studentship.

(2.) The Council may extend any such term of studentship upon such conditions as the Council may think fit.

Offences and Penalties

73. If any person wilfully procure, or attempt to procure, himself to be registered under this Act by making any false or fraudulent representation or declaration, either verbally or in writing, he shall, on summary conviction incur a penalty not less than twenty-five dollars nor exceeding five hundred dollars; and every person knowingly aiding or assisting him therein shall, on summary conviction, incur a penalty of not less than twenty-five dollars nor more than five hundred dollars for each offense.

74. (1.) If any person not registered pursuant to this Act, or practising under a permit as provided by section 67 or subsection (*c*) of section 66 of this Act, practices or professes to practise the profession of dentistry or dental surgery in the Province, he shall, upon summary conviction, be liable to a penalty not less than twenty-five dollars nor exceeding five hundred dollars. If any person not registered under this Act contracts with any person registered under this Act to practise the profession of dentistry or dental surgery for him or in his stead, each party to such contract shall be liable, upon summary conviction, to a penalty not less than twenty-five dollars nor exceeding five hundred dollars, and any members convicted the second time under this section shall be liable to a penalty not exceeding five hundred dollars nor less than one hundred dollars, or, in default of payment of any of the above penalties, he may, at the discretion of the convicting Magistrate, be sentenced to imprisonment for a period not to exceed sixty days.

(2.) In any prosecution under this section of this Act it shall not be incumbent upon the prosecution to prove any contract as aforesaid, provided it be shown that any person not registered under this Act has practised dentistry in the office or on or about the premises of any person registered under this Act; and if any such last-mentioned practice is shown the said contract shall be deemed to have been proven.

75. Any person who falsely and wilfully pretends to be a prac-

titioner of dentistry or dental surgery in the Province, or assumes any title, addition, or description in respect of such profession other than he actually possesses and is legally entitled to, shall be liable, on summary conviction, to a penalty not exceeding five hundred dollars nor less than twenty-five dollars, and, in default of payment of any of the above penalties, he may, at the discretion of the convicting Magistrate, be sentenced to imprisonment for a period not to exceed sixty days.

76. Any person not registered pursuant to this Act who willfully and falsely takes or uses any name, title, addition, or description implying or calculated to lead people to infer that he is registered under this Act, or that he is recognized by law as a person qualified to practise the profession of dentistry or dental surgery in the Province, shall be liable, upon summary conviction, to a penalty not exceeding five hundred dollars nor less than twenty-five dollars.

77. It shall be unlawful for any person to give a public demonstration of his skill or methods in practising dentistry or dental surgery or to exhibit specimens of dental work upon the public streets or highways, *or any other place other than his office.* And any person convicted of the offence under this section shall be liable, upon summary conviction, to a penalty not exceeding five hundred dollars nor less than twenty-five dollars, or, in default of payment of the above penalty, he may, at the discretion of the convicting Magistrate, be sentenced to imprisonment for a period not to exceed sixty days.

78. In respect of the practice of dentistry, it shall be unlawful for any person to either directly or indirectly publish or circulate any fraudulent, false, or misleading statement as to his skill or as to the method of any person or operator; or in any way advertise to practise dentistry without causing pain; or advertise in any manner with a view to deceiving or defrauding the public, or in any way that will tend to deceive the public, or to claim superiority over neighboring dental practitioners; or to publish reports of cases or certificates in the public press or otherwise; or advertise as using any drug, material, medicine, or anæsthetic, or advertise examinations of teeth free of charge; or advertise any amount as a price or fee for his service or services or the service or services of any person engaged as principal or employee in the practice of dentistry or dental surgery, or for any material or materials whatsoever used or to be used by him or such associate or employee in the practice of dentistry or dental surgery. And any person committing an offence against any of the provisions

of this section shall be liable, upon summary conviction, to a penalty not exceeding five hundred dollars and not less than twenty-five dollars, and any member convicted the second time under the provisions of this section shall be liable to a penalty not exceeding five hundred dollars nor less than one hundred dollars, and, in default of payment of any of the above penalties, he may, at the discretion of the convicting Magistrate, be sentenced to imprisonment for a period not to exceed sixty days.

79. All penalties recoverable under this Act shall, upon being paid to the convicting Justice, Magistrate, or Court, be handed over to the proper officer as provided for in section 56.

80. All prosecutions against any one acting in contravention of the provisions of this Act shall take place in accordance with the "Summary Convictions Act."

81. Every prosecution under this Act shall be commenced within six months from the date of the alleged offence.

82. Any person guilty of an offence against this Act or who violates or commits any breach of this Act not hereinbefore provided for shall, upon summary conviction, be liable to a penalty of not more than five hundred dollars or not less than twenty-five dollars, and, in default of payment, be liable to imprisonment for a period not exceeding sixty days.

83. Any person may be a prosecutor or complainant under this Act, and the Council may allot such portion of the penalties recovered as may be expedient towards the payment of such prosecution.

84. The Council by an order signed by the president, having the seal of the Council appended thereto, may stay proceedings in any prosecution under this Act where it is deemed expedient.

MONEYS

85 The Council shall have power to fix and pay the salary or remuneration to be paid or allowed to each officer, employee, or servant of the College and to each member of the Board of Examiners in respect of the services to be performed in connection with the holding of examinations provided for in this Act, and all moneys forming part of the College fund shall be paid to the treasurer and may be applied to carry this Act into execution.

COMMENCEMENT.

86. This Act shall come into force on the first day of June, 1917, and the "Dentistry Act," being chapter 64 of the "Revised Statutes of British Columbia, 1911," and the "Dentistry Act Amendment Act, 1914," are repealed as on and from such date.

Editorial

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The British Columbia Dental Act

We publish this act in full as amended because it contains more excellent features than any other act which has recently come under our notice. The framers of the act are to be commended for the production of an instrument which meets a demand. Generally laws are made to meet conditions as they are found. While the intentions of the act on the whole are so excellent, there are a few evidences that amendments were inserted that were not in the original draft.

It will be noted that elections to the Board are annual. Subsection two of section 30 provides that any resident of B. C. who was or is eligible to be registered except for passing the final examinations and paying the fees who joined the allied forces is entitled to be registered on application.

A splendid feature of the act is the annual registration. If the annual fee of $10 is not paid membership and license are forthwith lost.

Section 65 provides a limitation of six months for actions for malpractise. This should be in every dental act.

When the whole act is so well conceived and executed, then comes along section 66 subsection c and kicks it all over the lot. A graduate of dentistry of any university or college, etc., may get an annual permit without fees to practice under another dentist provided there are not more than four such dentists attached to each licentiate.

During the last session of the legislature the B. C. Board asked the legislature to amend the act so as to permit it to charge a fee of $100 for admission of holders of the D.D.C. certificate. The fee permitted in the act is $10. It appears the Board withdrew from the D.D.C. before it went to the legislature with the intention of re-joining as soon as the amendment received the royal sanction. Violent opposition to the amendments arose or in other words other amendments were asked for which would permit greater latitude for certain members to approach the public. The upshot of it all was the act was only amended in such parts as both parties could agree on and British Columbia is again outside of the Dominion Dental Council. The opposition will not allow the Board to charge more than $10 fee—for registration of D.D.C. candidates and the Board will not register them unless it gets more.

The Dental Welfare Foundation

At a meeting of the American Dental Trade Association held at Hot Springs in June 1921 a committee was appointed to approach the National Dental Association with a project of dental education for the public. Dr. Rea Proctor McGee presented the matter to the section of oral hygiene at the Milwaukee meeting. The section passed it on to the Board of Trustees who concurred in the schedule. The proposal is to print on post cards a series of twelve messages of 150 words each and arrange for their widest distribution through the individual dentist in his local community. A committee of the section on oral hygiene will censor the articles to be published.

Dentists will be asked to subscribe one dollar and fifty cents a month to have one hundred cards sent to a hundred persons whose names he has sent to the central organization who will send out the cards under the authority of the National Dental Association. Thus the teachings on the cards will be authorative and no individual dentist will have any power to influence their content nor have anything to do with their distribution further than to provide the names of the persons to whom they are to be sent.

The dental trade journals are carrying advertisements supporting the plan during October and November. There does not seem to be any arrangement by which Canadians might take advantage of the project. The oral hygiene committee might well interest itself and decide if there might not be some advantage in going with the wave started along our borders.

Tendency of Dentistry as Seen at the National

At a National Meeting are to be seen the finest offerings of leading men from every part of the United States.

As nearly as we can sense the general trend of thought and effort of such a vast and busy occasion, the outstanding features of the meeting were somewhat as follows:

The "new and startling" was distinctly absent. Conservatism is moving back more nearly to its proper relative position as a balancing consideration. The X-Ray is as much in evidence as ever but is finding its true level as an adjunct in diagnosis rather than a sole authority in all such matters.

Probably never before in our history has the making and fitting of artificial dentures been on as high a plane as it is today.

The vogue of the gold inlay is still in the ascendancy, while the porcelain inlay and the old style gold filling are apparently becoming ever smaller specks in the receding distance.

All along the line of operative procedures a closer application of the basic principles of cavity preparation are being shown and being insisted upon.

Constant improvements along the lines of appliances and technic are vastly raising the standards of all restorative operations on the natural teeth. The man who is still getting his inlays to place on a "catch as catch can" basis with the help of a carborundum stone, a mallet, and selections from the Old Testament, should grasp the fact that such methods no longer give a result that is in keeping with modern standards of service and accuracy.

"Prevention," the care of children's teeth, studies of diet, these are coming to be the great forward looking topics of the day.

Those who met Drs. Minnie Proctor and Evangeline Jordan, both of Los Angeles and both specializing in the care of children's teeth, cannot have any doubt as to the fact that with the advancement of knowledge on the part of parents, there will presently open up a wonderful sphere for many such practitioners among us.

Saving in Purchase of Dental Instruments

Ever since the beginning of the war there has been great difficulty in obtaining books and instruments for dental students in the quantities and varieties required. The war reduced the supply of many instruments and completely discontinued the production of many others. Besides this there has been of late a tremendous increase in the number of students. Another difficulty in the matter has been to get every student to purchase the instruments prescribed. No compulsory plan could be adopted because too often the goods were not to be had.

Where there are five or six houses supplying students equipment each gets what he thinks he can sell, sometimes one or more houses are left with a large stock of equipment to carry over or as more often occurred there were not sufficient supplies of a given variety to supply the demand, and then began a system of borrowing and buying second hand books and equipment. Thus the demand for instruments lost any kind of stability. Students found that by purchasing instruments on demand in small quantities they paid more than regular prices and rightly so because their business was more or less of a nuisance. Finally they began to buy in quantities through their own organizations but found they often got poor qualities of goods.

The Facultys' instrument Committee decided to arrange for supplying the whole equipment for each year. There were several proposals before the committee.

The Board or the College to call for tenders and buy the equipment complete from a reputable supply house and sell it to the student at such a price as would re-imburse the College for its trouble. Or in other words set up a dental supply house in the College. While a larger saving could be made to the students and a profit to the College it did not seem to be wise to recommend that the College should go into a business of this kind. One supply house offered the college a discount of 25 and 20 p.c. from list prices. This seemed very attractive especially on an order of approximately one hundred thousand dollars. Finally the plan was followed of calling into consultation the president of the students' parliament and to gather tenders for equipments for all the students. The Cleveland Dental Mfg. Company got the tender for instruments, the Cadmus Ash Company the engines and McInich & Co. the books. Only dental manufacturers of standard supplies were asked to tender. The books were given without tender because it was explained that publishers have a set price at which they must be sold but it since developed that not all dental books come under such rules and consequently there are many books now being bought much below the regular price.

The plan of execution is to ask the student to go to the supply house receiving the tender and purchase his equipment bringing a receipt for the same to the College which admits him to the classes so far as equipment is concerned.

The Cleveland Mfg. Company not being represented in Canada made arrangements with the National Refining Company to deliver their goods to the students.

So far the plan has worked admirably. The students are equipped with standard goods as never before. The classes can go forward without the delays of waiting for instruments. They have them at a price in many cases thirty per cent. below what they paid formerly. The wholesale manufacture and delivery makes the cost for service much less and the cost of selling almost nothing. This means something when one knows that the cost of selling dental goods is more than forty five per cent.

New Regulations in Manitoba

New regulations concerning dental students have been approved by the Dental association of Manitoba and will become effective August 15.

Following is the new bylaw passed:

"Every student desiring to practice dentistry in Manitoba shall register with the association as a student and shall enter into articles of indenture with a licentiate of Dental Surgery in Manitoba for a period of six years, and shall spend the whole of such six years as a bona fide pupil in the office of and under the instructions of such licentiate, except for such portion thereof as the student shall, with the consent in writing of the board, be engaged in the study of dentistry at a college approved by the board, for that purpose; provided that any student registering after the fifteenth day of August 1921, shall spend four academic years in the study of dentistry at a dental school or college approved by the board for that purpose, two of which years must be the first two years of the period of his articles of indenture.

The application for making the new bylaw effective appears in the current issue of the Manitoba Gazette.

Dentists Commended for Charitable Work

Averaging 125 operations a month, the Brandon public schools dental clinic has given splendid service since it was first opened in October. Four local dentists, Drs. Hurst, Jones, Huges and Spiers have given their services free to clinic work for public school children who have not been able to have their work done elsewhere. The clinic has been held in the welfare station in the court house, the cases coming before the four dentists, being recommended first by the public health nurses.

The report for May shows that the total attendance was 67, while for June it was 65. The total operations in May were 130 and in June 125, while new cases reported in May were 23 and the next month 26. Twenty cases were completed in May and 22 in June. A vote of thanks to the four dentists mentioned above, was passed at the regular meeting of the school board. It is stated that at some future time it is the intention of the school board to establish a permanent clinic for dentistry in the public schools and to employ a dentist paid by the school board.

Editorial Notes

We copy the following from a London paper.

One of the dentists in Ottawa is "Dr. Leggo." That's the kind of chap wanted. There are altogether too many Dr. Hangons in the profession to make their close acquaintance comfortable.

Sergt. Robert Stanners, died at Byron Sanitarium, London, Ont., last month. He had been an inmate since last November, suffering with tuberculosis. Deceased was born in Vancouver, B. C., 25 years ago and before the war was a dental mechanic. He joined the Army Dental Corps in 1915. Whilst serving in France he was slightly gassed. He was finally discharged in 1919.

The American Institute of Teachers meets in Montreal Jan. 23rd, 24th, 25th, 1921.

Dr. Upton, Calgary, has been appointed to take the place of Dr. Palmer, resigned, on the school board.

The Council of Saanich, B. C., when asked by the Parent Teachers' Association to give $400 toward supporting a dental clinic passed the matter on to the School Board. The Association had collected $385 by a tag day.

The "Star Weekly" says that the students at the dental college are taught to charge for their services on the basis of the time spent on an operation. This is the labor union method and is open to the charge of spending time from ignorance or disposition for which no service is rendered.

Two Red Cross Dental Cars are operating in Saskatchewan.

Dr. Frank P. Smith was elected President of the British Columbia Dental Association at the July meeting in Vancouver. The Vancouver meeting was a huge success.

Dental Colleges which do not supply post-graduate work for practitioners are missing a great opportunity for service in a direction which will lead to the establishment of commercial schools for instructing graduates. Every post graduate course put on by a reputable dental college is doing more for the public than if it trained that many more undergraduates.

Dental Societies

A Report of a Banquet Held in Halifax

Optimism as to the future of dentistry in Nova Scotia and good words for this faculty in Dalhousie University was the tenor of the speeches delivered at the banquet given in University Hall, by the Second Dental Post Graduate School of Nova Scotia last month.

About thirty-five delegates and guests were present.

Dr. Frank Woodbury, Dean of the faculty of dentistry in Dalhousie University, was in the chair, and in the first toast, coupled the name of the King, with that of the President of the United States, in honor of the guests of the evening, Dr. F. W. Allen and M. E. Peters of Boston, and also Dr. Royer, of the Massachusetts Health Centre of this city. The Dean then called on Dr. G. K. Thompson, who was largely instrumental in obtaining the services of Drs. Allen and Peters, to propose the toast to "our guests." This Dr. Thompson did in a fitting manner. After mentioning the excellent work done by these two dentists, he referred to Mr. G. S. Campbell, Chairman of the Board of Governors of Dalhousie, who was also a guest of the occasion. Also Dr. John Cameron, and Dr. Nicholls, of Dalhousie, and Dr. Parker of Sydney.

Dr. Allen of Boston, made a brief reply to this toast, stating that he had enjoyed the trip, had met an excellent body of men, who had taken an exceedingly intelligent interest in the work he had tried to set before them.

Dr. Peters next replied, stating that he was born in Canada, being the first part of his life in St. John. He attributed to Canada, and to the Maritime Provinces in particular, everything of benefit which he was able to place before them.

Dr. B. Franklyn Royer, of the Halifax-Massachusetts Health Commission, dwelt on the work of the Commission in its relation to dentistry—the ideas which he had worked out as ideal, he had not been able to adhere to strictly, but matters were improving. On his consulting staff was a dentist—Dean Woodbury,—and in conjunction with him, he had formulated the plans for the existing "Pre-School-Age Dental Clinic." It was now realized that the teeth could not be allowed to go as they pleased until the school age was reached—the first set must be looked after as sharply as the second, and this could only be done by getting the children between the ages of one to six years. A large number of children they had handled were of the poorer classes, many of their teeth being in a bad state before they were brought to the Clinic. As a result the work and results were far from ideal. Careful records were, however, being kept, and a great deal of valuable work was being done. He lauded the work of Dr. Arabella MacKenzie and her staff. Halifax, he said, was well to the fore in both medicine and dentistry, and should not have to look to the Middle West for leadership—all that was required was team work; with both medicine and dentistry, pulling together. This City was blessed with having a most intelligent and forward looking group of doctors and dentists.

Dr. Woodbury in introducing Mr. G. S. Campbell, mentioned that it was hoped to establish a health centre in the South End of the City in the course of the next year or two. Mr. Campbell spoke of the wonderful growth of the dental faculty of Dalhousie, and the growth of the university as a whole. This growth could be largely attributed to the energy and enthusiasm of the local dentists the moving spirit of whom was Dean Woodbury. The university in any of its faculties did not aim primarily at mere bigness but rather in the improvement in the class of student it turns out. The Maritime Provinces it was recognized had the best "raw material" of men in the world.

Dr. Allen took occasion to state, after having seen the work of Freshmen and second year men of the Dental Faculty of Dalhousie, that if these specimens could be taken as samples, then Dalhousie was not only equal but superior to any college within his experience. The Board of Governors was this year expending nearly ten thousand dollars in fitting up the Dental Clinic and installing equipment. Next year even a larger amount would be spent.

Dr. A. G. Nicholls, Professor of Bacteriology, Dalhousie, was next called on. In dentistry as in medicine, the preventive side was at present being stressed. This was largely due to the war and the desire to conserve. In his teaching Dr. Nicholls urged his students to get back to first principles—search for the root of the subject, and by so doing develop the mind.

The dentists of Nova Scotia, he said, were ahead of the doctors in that they had established a post graduate school. He hoped to see a similar school established in medicine within the next few years.

Dean Woodbury then introduced Dr. John Cameron as "an expert in anthropology and the man who has unwrapped the oldest mummy that was ever extracted from the Pyramids of Egypt." Dr. Cameron also emphasized the need of universities of today and pointed out that the chief duty of an instructor was not to turn out students who could recite what they had learned like a parrot, but rather men with a broadened mental horizon who could contribute their intellectual share to the community.

Dr. Ritchie next spoke on his experience in connection with school dentistry. The first dental examination of school children in Canada took place in Halifax in 1905. From that time there has been much advance, but the School Board of today cannot yet devote enough money to make school dentistry nearly as effective as it might be. He lauded the work of the Dalhousie Dental Clinic, which devoted one chair to the school children in return for a mere honorium which was granted by the City Council. Next year it was hoped that four chairs would be devoted to this necessary work, but the School Board of the city had not yet decided to pay the small amount asked by the University.

Dr. Ryan, Secretary of the Faculty of Dentistry of Dalhousie was the last speaker of the evening. Dr. Woodbury then thanked the Board of Governors, the instructors and others who had contributed to making the Post-Graduate School a success.

New Brunswick Dental Association

The following officers of the New Brunswick Dental Society have been elected:

Dr. W. R. Wilkes, St. John—President.
Dr. Sawaya, St. John—Vice-President.
Dr. F. A. Godsoe, St. John—Secretary-Treasurer.

A committee was appointed to endeavor to form a Maritime Society composed of the societies of the three provinces and to meet in 1922 in Charlottetown. The committee is composed of

Drs. F. A. Taylor, F. E. Burden and A. J. Cormier.

Some time was taken with a discussion on dental legislation with regard to registration of men not qualified to register under the New Brunswick Dental Act.

The society passed a vote of censure on the present provincial government for not carrying out the N. B. Dental Act, and rejecting the bill brought before the legislature in connection with the registration of Dr. Gerard, of Fredericton.

Dr. H. S. Thomson, of Toronto, gave an address regarding the Canadian Dental Research Foundation and the work of the Oral Prophalytic Society.

A vote of thanks was tendered Dr. Thomson for his interesting and instructive address.

Dr. J. M. Magee, of St. John, was appointed representative from New Brunswick on the Dominion Dental Council.

The Ability of Dentistry to Cope with the Diseases Coming Under Its Care

(*Concluded from Page* 370)

supporting structures of the jaws are replaced sometimes with new bone and sometimes with artificial supports and over these is grafted or replaced new skin thus restoring most horrible disfigurements to normal or more pleasing appearances.

As the result of research, in science, dentistry, surgery and medicine it is possible to assure parents and guardians that children need not suffer as a consequence of minor deformities or from the consequences of decay of the teeth and that adults teeth can be retained the normal span of life with vigilant personal and professional care. And if by reason of deformity, neglect, disease or accident one or -more teeth are lost dentistry can re store to beauty and function with a likeness so true that neither patient nor friends know the difference.

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Dominion
Dental Journal

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ORIGINAL COMMUNICATIONS

On Pyorrhea

M. Schwartz, D.D.S., L.D.S.

During my stay in Palestine associated with the American Zionist Medical Unit and working in the Dental Clinics of Jaffa, Jerusalem and Safed, many cases of Stomatitis presented themselves that were indeed puzzling to me at first. I had never seen in this country any infection of the mouth so virulent and so destructive. These conditions happened mainly in young children with but in two or three adults that I remember. The patients could hardly open their mouths, but upon examination I found one mass of putresence, the gums white and pussy, the roots exposed and loose, much bleeding and very sore. I found that the physicians at our clinics treated this condition with a 10 P.C. solution of Salvarsan or NeoDiarsinol in Glycerine, with success. I had then all these cases sent to our clinic and thenceforth treated them. Very few cases had to have the loose teeth extracted. I seldom saw in my private practice so invariable a cure as these cases of foul mouths. I had an idea even then that this Salvarsan solution is used in Vincents Angina but not to any other lesion of the mouth.

It struck me that it may prove beneficial in Pyorrhea, although for no reason in particular as my scientific knowlege of the subject is very limited. So in many cases of Pyorrhea which presented themselves there, after thorough scaling of the roots in the scholastic manner I applied this remedy with remarkable success. I have reason to believe that in several cases the whole condition has healed up but whether there were any recurrence of the disease I had no means of finding out. I had even arranged with our pathological laboratory in Jerusalem for conjoint experiment but owing to my being sent about on duty to the clinics in different parts of the country I had to drop it. Since I came back to my practice here, I found it very difficult to procure this solution. Dr. A. Brodey, Demonstrator of Practical Physiology at the College made it for me. He also made a 3% solution which I use when the condition of the alveolar pockets is somewhat abated.

It is interesting to note that in coming home and passing Paris I had occasion to visit Dr. B. Kritchewski, who, although a graduate of Baltimore has been practicing dentistry in Paris for the last twenty years. He is at present Professor at L'Ecole Francaise de Stomatologie and is working conjointly with Dr. P. Seguin of L'Institut Pasteur de Paris on Pyorrhea. I was interested to see a complete pathological laboratory attached to his dental office.

The reason I mention this is that these doctors are experimenting on exactly the same remedy for Pyorrhea, were interested in my experiences with the drug in Palestine and gave me their pamphlet of original researches, the conclusion of which I will try to give here in a short translated resume.

For sometime now bacteriologists have determined the apparent flora of the necrosis and ulcerations prevalent in the mouth cavity. Spirochetes, Bacilli fusiforms, Leptothrix, Cocci, etc. constitute the essential elements which in spite of much research remain as yet a great deal in obscurity. What for instance is the pathogenic action of any of these germs or their associations in the mouth cavity.

Stomatologists generally found themselves therefore more interested in the ethiological factor, the effects of which are much more in evidence than in the microscopic studies. So they, the authors of this pamphlet, went into a thorough study of the flora of the mouth and reached this conclusion:

THE AFFECTIONS NECROTIC AND ULCEROUS OF THE MOUTH ARE OF LOCAL SPIROCHETA COMPLICATED BY VARIOUS SECONDARY INFECTIONS SUCH AS BACILLI FUSIFORM, ETC.

Then follows a description of the Morphology of Spiricheta studied by different men as Miller, Hoffman, Cohn, Koch, Comandon and Sangiorgi and the conclusion was that there are many forms of Spirocheta and that they are all strictly anaerobic. One may classify these cultivated germs in two groups.

Dentium
A. Spirocheta fetida, comprising Spirocheta Microdentium
Mucosum

B. Spirocheta non-fetida comprising Spirocheta Macrodentium
„ of D'Ozaki

All of them are of different characteristics although of great similarity. They are comparatively easy of culture in impure form but very difficult in pure form and above all to conserve.

Here follows a description of the beginning of the use of salvarsan and Neo-salvarsan for Vincents Angina, Stomatitis Noma and Pyorrhea Alveolaris. Gerber in 1910 has noted that Syphilitics treated with salvarsan had their gums cleared of Spirocheta especially those of marked lesions. On the other hand Plaut (1911) and later Heuck and Jaffe show that one or two injections of salvarsan are insufficient to eradicate the Spirocheta from the pyorrheal pockets. Zilz (1913) recommends Arseno-Benzol not only for Pyorrhea but for peridental abscesses and according to Kolle intravenous injections of Novarsenobenzol cures every case (90). According to Dr. Kritchewski's own experimentation 70 per cent of cases responded to treatment only for more effectiveness local application of the drug to the pockets is necessary.

The pamphlet further describes their experiments with pure cultures, with impure cultures and with mixed membranes, and concludes:

1. That the lesions of Pyorrhea are caused mainly by Spirocheta not one in particular but of several kinds, all pathogenic, their pathogenic action being augmented by the Bacilli fusiform, which is always found in the lesions of the mouth.
2. That the bacillus fusiform in itself is not pathogenic.
3. That the Salvarsan treatment is the one of choice and that once the spirocheta disappear, the bacilli are rapidly taken up (phagocite) and the association of the Fusso-Spirilae which constitutes the basis of the flora is destroyed.

May I repeat in conclusion that the few cases I treated with Salvarsan during the last few months, are doing very well, and I can conscientiously say that I am satisfied with results. After three or four applications the pus disappeared and the gums took up a healthier appearance. Perhaps some day I will in conjunction with Dr. Brodey take some smears on slides and study for myself the actual effect of the drug on the Spirocheta, should I be able to find them. Please remember all the foregoing is not due to any personal investigations as I never had a chance for scientific study. I merely tried to convey to you somewhat the meaning of the personal efforts of Drs. Kritchewski and Seguin.

Opening of the Royal College of Dental Surgeons

Dean's Address to the New Comers

The Faculty and Staff of the College welcome the students who have been in attendance in the past, but they especially extend a welcome to those who have reached these halls for the first time. The new comers have a real welcome from every member of the institution, from the Board of Directors to Tom Jones. There is a special welcome prepared by the Sophomore Class whose privilege it is to lead the Freshman through the maze of an initiation which is expected to make him fit company for the elect.

It must not be expected that a complete Dental Education will be obtained from the regular teaching staff. There are many teachers about a college and not the least among these is the student body itself. The faculty may set the standards of mental acquirement for examinations in dentistry, but the students themselves set the standards of manhood and citizenship, which are in the long run, of greater value.

This is a democratic institution, from its foundations to its highest in authority. Your Dean hopes that the time will never come when rules of conduct will have to be placarded about the building. No gentleman should have placed before him for his direction, a sign which would imply that he might violate the rules of good conduct. In this institution the students themselves take the responsibility for their own conduct; true the faculty are interested, and take their share of the responsibility. In a body of eight or nine hundred men it would be remarkable if some one, or more, did not transgress the proprieties. All I can say is, "The way of the transgressor is hard."

The reputation of every member of a calling is more or less in the hands of every other member. If any considerable number of members of the dental profession are not upright gentlemen, then all must suffer for their transgressions alike. Many young men have an idea that a professional man's reputation is made by himself alone, or by his service to his local clientele. This is erroneous. A professional reputation is made by professional brothers. Right here in this college, every man of you, is judging the character and attainments of every other man, and when you leave here you will speak of him as you found him. You will send your patients to those who will honestly serve them. You will know each other through and through before you leave, and what is more, you will know the staff just as thoroughly. Their standards of life will be as an open book to you.

It sometimes occurs, while men are young, that they fall into habits of action which are not honest or respectful to others and as time goes by they change because of better examples about. It has always been a marvel to me what changes take place in the esteem in which students are held by their confreres during their four or five years at college. The quiet reserved unnoticed freshman, who minds his own business and only a few know anything about, is often the recipient of the highest honors in the final year; and the man who harangues the fellows at the first freshman class meeting, is too often the butt of the fourth year. The rubbing of shoulders and the testing of wits is a great educator. Let me warn you, the sophomores are the wise men of the college and you are in their keeping. If you come by misfortune, it is surely their fault, because the choice of your calling bespeaks your wisdom. With such young men and women as are here before me, the sophomores, with the help of the faculty, will place dentistry on its highest pinnacle.

You have chosen a calling which may well be classified among the educated professions. It offers a life work of service in the healing art. Its functions are broader than a mere repetition of mechanical procedures, it has to do with individual health, and in a still broader sense, public or national health. It offers an honest living to those who will serve, it will not provide riches, as the merchant or the captain of industry understands them, but it will provide the company of the cultured, educated and refined people.

An education such as you will receive before you leave the halls of this College and this University places you apart, in a sense, from other people; you will have an added responsibility in helping to guide the destinies of this country. The privilege of a higher education brings its responsibilities. It is the duty of every educated man to help to steady the affairs of the nation in times of stress and in times of quiet to take a part in every effort which will bring peace and happiness to the people. Indeed it would be well if each young man here, could read the true biography of many of the great men of this country and especially those of his chosen profession.

The young man or woman who undertakes the study of dentistry should bring with him a good physique, because I assure you, that it is no weakling's job. It takes great physical and mental endurance to stand all day long and give advice based on years of study and observation and execute treatments for old, middle aged and young, whose state of health is below normal. Besides physical endurance the mental and moral uprightness of the dentist counts for much. A capacity to execute minute mechanical detail is essential. Neatness and cleanliness must be developed to their highest attainment.

The late Dean Willmott often said that "he knew of no calling in which a broad liberal education had a higher commercial value than Dentistry." The dentist to be a success, must know the general principles of many callings and the details of some parts of others, as well as an ability to speak and discuss intelligently life's many problems with his clientele. He should have such a training as would equip him to solve new problems, because no two dental problems are alike. There is great danger of young men beginning to specialize too soon. I once heard a man of experience say that if a pupil has little brains and no ambition, allow him to specialize at as early a date as possible, because he can at once become productive, but if he has great capacity have him lay the deepest educational foundation, and an opportunity will come for him to act in a large sphere.

You will notice from the calendar you received, and the Y. M. C. A. hand book that there is a veritable mass of student organizations to be interested in. The staff urges you to take part in all these activities. It has been through the energy and foresight of Dr. Willmott that these organizations have been designed. It is expected that during a student's college course he will have taken some official part in at least one organization. Every graduate of this college is expected to be able to act officially in the usual organizations and make a creditable address. There are many of you who have brought with you your church credentials, let me suggest that you choose some convenient church of your denomination, become at once affiliated with it, attend its services and social entertainments, become a part of its organization. Have a church home. No doubt you will find it convenient or desirable to attend some other church service than your own on occasion, especially if your friends do not attend your church. Such excursions add zest and interest to college life.

I should like to say something of athletics and the privileges of Hart House, as well as our affiliation with the great provincial university, but my time is gone and your patience spent.

Let me say in closing, you are received into the fold of dentistry, the die is cast, it is your duty to go forward and take advantage of the opportunities here presented, and on behalf of the Board and Faculty I will add that they will do their part to the best that is in them.

Manipulation of Amalgam

WILLIAM HARPER D.D.S.

PROPORTIONS

Proportions need not be exact but mercury should be plentiful, sufficient to avoid any trace of dryness in the mixing, and just within the other extreme of liquid plasticity, either extreme is unfavorable to thorough amalgamation. When the proportions have been decided upon by a trial mix, it will save time and material to use the small amalgam balance sold for that purpose, the amount of mercury used in making a balance has nothing whatever to do with the excess mercury in the finished filling.

MIXING

All high-grade alloys amalgamate rather slowly. It requires thorough rubbing of the particles in the presence of mercury to develop thorough amalgamation, conditions that prohibit a hand mix. Mixing time of THREE minutes, or a MINIMUM time of one minute in the electric mixer. At the end of the mixing period the mass should be sufficiently plastic to flatten out to about half of its diameter when rolled into a ball and dropped on the cabinet from a height of about four inches.

Thorough mixing is necessary to attain the degree of plasticity most favorable to adaptation.

It is also necessary to secure the greatest strength for filling.

An incomplete mix will make an unstable filling by causing shrinkage or expansion in the finished filling in from one to nine months under the varying temperatures in the mouth.

The very plastic consistency described should be retained during the filling of the first two-thirds of all average large, and proximo-occlusal cavities, to insure adaptation in the use of high-grade alloys. This important requirement is best accomplished by temporarily retaining sufficient of the excess mercury (commonly removed during the final mixing and kneading), to be removed ultimately, after it has served its purpose, by tamping, forceful, and orderly packing, and the final packing detail, stopping the cavity walls.

TAMPING

Tamping has proved to be a very material aid in the removal of excess mercury, to uniform condensation, and adaptation. Tamping is done by lightly tapping each piece of amalgam placed in the cavity, with the plugger, until it spreads as a uniformly thick, dense, and plastic layer, in contact with the surrounding walls and well into the angles. This procedure provides uniform bulk and plasticity under each thrust of the plugger. Tamping in conjunction with forcible and orderly condensation seems to be the simplest and the most effective means for working out the excess mercury, and experience shows a decided improvement in stability, and perfection of adaptation, when this operative detail is carried out.

Condensation

The packing follows tamping and should be as forceful and thorough as possible, and applied with the greatest possible uniformity. The most practical means of accomplishing this in the mouth is by an ORDERLY STEPPING of the plugger. Following the detail of tamping, we start the packing of each piece of amalgam with a medium or large plugger at the center of the filling, stepping a little less than its diameter in ONE direction—outward in a gradually enlarging circle until the cavity walls are reached. The surplus mercury expressed is scraped off with the side of the plugger, and this surplus may be used for the finishing of the filling, by forcibly pinching out the fluid mercury to the point where you have remaining a rather stiff but workable mass, which is again tamped and packed, repeating the operation until the cavity margins are well covered with hardened amalgam.

Stepping the Cavity Walls.

The final condensation of each piece of amalgam is done by inclining the smallest plugger toward the cavity wall and stepping about half of its long diameter (size of plugger about 1.2 by 1.8 m.m. in diameter) immediately against the walls, and well into the angles, ONCE around the cavity.

With an orderly packing, the excess mercury is always driven in one direction—outward, where it is at all times free to come to the surface to be removed.

The necessity for packing force and thoroughness has always been taught (though not sufficiently well applied), but the need for plasticity, tamping, and orderly condensation as applied to amalgam, are new thoughts or facts that MUST be accepted, to secure uniformity in results in adaptation, strength, and stability.

A filling unequally condensed is to the same extent unequal in its resistance to crushing stress and flow, strongest where it has received the maximum condensation, weakest where it has received the minimum condensation, little or no excess mercury where the filling has received the maximum condensation. Excess mercury, always means, mercury UN-AMALGAMATED

Focal Infection and Gastro-Intestinal Infections

J. Zimmerman

"Heart disease is a greater menace than tuberculosis, and heart disease to a large extent is preventable by proper mouth sanitation. Streptococcus Viridans from the mouth enters the circulation through pyorrhea pockets, dental abscesses and tonsil crypts, and may cause arthritis, nephritis, neuritis, gastric ulcer, chorea, septic purpura and ititis." Hartpell.

Henry A. Cotton, M.D., reports that at the State Hospital in Trenton, N.J., many patients suffering from mental diseases also had chronic infections of the teeth, tonsils, gastro-intestinal tract, and after extractions of the teeth the patients recovered. Chas. H. Mayo, Rochester, Minn., states that three-fourths of the Mayo clinic is abdominal surgery, nearly all of which can be traced to mouth infection. F. Billing M.D., says: "The focus of infection which causes Streptococcus Viridans bacteriemia and chronic malignant endocarditus is often alveolar abscess."

A focus is a circumscribed area of tissue infected with pathogenic micro-organisms. A focus may be primary or secondary. A primary focus is located in tissues communicating with a mucous or cutaneous surface.

A secondary focus is generally a result from other foci through contiguous tissues or at a distance through blood stream or lymph channels.

The primary foci may be located anywhere in the body. The following are common foci of infection:

1. Infection of teeth with development of pyorrhea alveolaris and alveolar abscesses.
2. Infection of tonsils.
3. Mastoid, due to extension of Eustachean tubes from Tonsils.
4. Maxillary and other sinuses.
5. Finger and toe nails (especially ingrown).
6. Chronic infection of bronchi.
7. Chronic infection of gastro-intestinal tract.
    a. Cholecystitis.
    b. Appendicitis.
    c. Intestinal ulcers.
    d. Pancreatitis.
    e. Intestinal stasis.
8. Chronic infection of genito-unisary tract.
    a. Prostate.
    b. Vescicular Seminalis.
    c. Fillopean tubes.

Secondary foci may persist after primary focus has been removed or disappeared. Systemic and local disease may occur through infection from a focal point by way of blood stream. The tissues so infected may constitute new foci which explain the chronicity of many local and general infections.

ETIOLOGY

The mouth and the upper air passages are most frequent seats of foci. This may be due to the presence of numerous micro-organisms in the mouth, such as streptococci, staphylococci, pneumococci, diphtheria, meningococci, bacilli, tubercolosis, etc.

In pyorrhea dentalis and in alveolar abscesses the percementium of the root and the neck of the tooth becomes involved. The infection first attacks the edges of the gum which may be retracted, due to foreign materials such as toothpicks, decaying food debris. The endameba buccatis and other pyogenic bacteria gain admission to the edges of the gum with the reproduction of these organisms and formation of toxic materials retraction of the gums increases and the peridental membrane becomes involved. When the periostium becomes destroyed there is a softening and ulceration of the soft parts, with the result of acute or chronic alveolar ulceration.

From the open pockets around the necks of these teeth there is a constant discharge of pus containing the pathogenic organisms and their products. These being swallowed and swept across the tonsils and other lymph nodes are absorbed by the small capillaries and lymph vessels.

Alveolar Abscesses

These may be divided into two groups:

1. Abscesses arising from alveolitis, osteomyelitis, pyorrhea dentalis.
2. Blind abscesses.

The abscesses of the first group generally originate due to traumatism, followed by inflammatory conditions and production of pus. These abscesses generally break through and drain into the mouth.

Blind abscesses consist of a small sac, the walls of which are made up of dense fibro-elastic tissue. The sac is generally filled with a purulent exudate containing a suspension of bacteria. The causes of these abscesses are poorly filled roots, or roots in which the canals have become infected. These abscesses may also be caused by organisms carried to the site through the blood stream and may be secondary themselves.

In case of the first type of abscesses there is generally severe pain, local swelling and general fever and chill. The blind abscesses are generally chronic for years and create no local symptoms. Their presence can be best determined by X-ray pictures.

From the pus of an alveolar abscess the following organisms are found: streptococci, streptococci Viridans and streptococci hemcolyticus, staphytococcus aneus and alteus, fusoform bacilli and other bacteria.

Gastro-intestinal infections are due to presence of pathogenic organisms, which gain entrance by swallowing infectious materials from the mouth, nose and throat, and through infected food such as milk. These pathogenic organisms, as streptococci, infect the lymph tissue of the intestine and pass on into the lymph nodes. Infection through lymph channels may extend and form new foci of infection.

Gastro-intestinal infection may also be caused by a focus set at some distance, as in the mouth. It has been proven experimentally that appendicitis, cholecystitis and pancreatitis have been formed as result of foci situated in the head.

Hunter states that septic gastritis and septic enteritis is a common result of a prolonged oral sepsis.

Rosenow's work shows that intestinal and gastric ulcers are of a hematogenous origin, the focus of which is found in a septic tonsil or septic tooth.

Appendicitis is usually caused by a streptococcus from a mouth or throat focus. May be also caused by colon and other intestinal bacilli taking on pathogenic qualities and producing mixed infection.

Rosenow shows that appendicitis is often of secondary origin and caused from nasal, or tonsilar or mouth infection. He has demonstrated in many cases that after the elimination of oral sepsis the appendicular region returned to normal. Cholecystitis may be caused by streptococci from a focus of the head. The infectious organism carried in the blood stream may lodge in the terminal blood vessels of the fundus of the galt bladder. Due to presence of the bacteria in these vessels dilation of vessels takes place with escape of white blood cells and micro-organisms. These may produce necrosis of the local tissues and acute cholecystitis may result.

Cholecystitis may also be in itself a focus of systemic infection.

Most of the foci of infection are localized about the head but do not produce acute systemic diseases. It is however a fact that rheumatic fever and endocarditis are the result of focal infection of the mouth and throat.

The presence of focal infection does not necessarily indicate systemic disease, although it is true in many cases. The natural immunity of the individual plays a great part in formation of systemic diseases. The natural defences of the body tend to wall off the focus of infection preventing the bacteria and their toxins from spreading. This may be accomplished by:

a. leucocytosis—accumulation of leucocytes in the area of infection and formation of exudates, which will prevent farther spreading;
b. Leucocytes phagocytosis with the destruction of the invading bacteria;
c. Formation of protective antibodies in the blood and tissues.

Similar protective processes may be induced to form by injection of attanuated or dead pathogenic bacteria into a healthy body. When the body resistance is lowered due to exhaustion or debility, the pathogenic organisms become more virulent and may produce systemic disease. Soreness of the tissues, joints, muscles and nerves are also due to focal infection about the mouth and throat; since with the removal of these foci of infection disappearance of soreness follows.

The bacteria may spread from the focus of infection through the blood stream, known as hematogenous. The bacteria and toxins are carried in the blood to the terminal blood vessels, where they may be deposited and when accumulated in sufficient numbers assume their pathogenic functions.

The infectious micro-organisms may also spread from focus to other tissues through the lymph channels and lymph nodes, known as lymphogenous.

Hematogenous and lymphogenous dissemination of micro-organisms and their toxins may go hand in hand.

The bacteria by the elimination of toxins may produce systemic intoxication, especially in a focal area, e.g. in diphtheria and tetanus. This toxin is set free in the blood and may produce general infection.

The constant presence and elimination of the toxins may produce a condition of anaphylaxis,—in which there is a decreased resistance to the action of the toxins.

The pathogenic organisms in all foci of infection are generally of the streptococcus-pneumococcus group, which may differ in virulence depending upon the organ in which it is situated. Rosenow has shown that these organisms may attain a specific pathogenic and elective affinity for certain tissues, thus an organism isolated from the kidney and grown on culture media, when injected into an animal will produce disease of the kidneys. Organisms isolated from rheumatic endocarditis produced acute arthritis and simple rheumatic endocarditis when injected into rabbits.

In gastro-intestinal diseases these organisms attain an elective affinity for appendix, pancreas, duodenium, gall bladder, etc.

Acute appendicitis may be caused by lymphogenous or hematogenous infection. The seat of the primary infection may be located in the throat and nose or in the jaws. The appendix is generally a seat of secondary infection, brought about by severe bacteriemia, due to rapid filtration of bacteria through lymph node or by infection carried through the blood stream in which case it is due to a specific strain of streptococci.

Rosenow's investigations have shown that the stiptococcees found in appendix have attained an elective affinity for these tissues. When these organisms are isolated and injected into animals acute appendicitis occurs.

When the organisms reach the appendix they cause small hemorrhages in the walls of the organ. Reaction to injury takes place with increased amount of leucocytes and increase swelling of the tissues and obstruction of the canal of the appendix. With the closing of the canal a rapid increase of other bacteria present in bowel and appendix follows, increasing the pathogenic tissue changes until necrosis and gangrene take place.

Cholecystitis is due to hematogenous infection with strains of streptococci and other micro-organisms. Rosenow has shown that these organisms attain an affinity for the gall bladder. He has also shown that cholecystitis may be only a secondary infection, while tonsilitis may be the primary focus of infection.

Cholecystitis may also be due to hematogenous infection by typhoid bacilli and other micro organisms, but the fact that streptococci are more frequently found to be present in the centre of gall-stones leads us to believe that the streptococcus cholecystitis is most frequent.

Acute gastric and duodinal ulcers are due to the presence of a strain of streptococci which have the affinity for the walls of the stomach. The production of the ulcers results in small hemorrhages inside the stomach. With the increase of hemorrhages and action of micro-organisms anemic necrosis weakens so the overlying mucous membrane that it becomes digested by gastric juice. If the infection and injury is not great, healing takes place; if the infection is virulent, chronic ulcer results.

Acute pancreatitis of a serious degree generally requires surgical interference.

Focal infection may cause not only acute diseases but also diseases of a chronic nature. This will depend upon the virulence of the streptococcus group. When the virulence is low the tissue reactions excited by the organisms is much less than in the case of virulent micro-organisms. Consequently there is no production of positive chemotaxis but a formation of a fibrious plaster exudate in order to wall off the area of infection. This produces embolism in the terminal blood vessels resulting in a lessened blood supply and consequently malnutrition. This leads either to hyperplactic or atrophic changes of the part involved.

Chronic cholecystitis is generally the result of acute infection. The streptococci, which lodge in the fundus of the gall bladder at the termination of a blood vessel may cause hemmorrhage and corresponding tissue reactions. If the infectious organism is of a low virulency the infection will be of a chronic nature and gall-stones will be formed in the gall-bladder. As long as the focus of infection is maintained reinfection may lead to acute cholecystitis.

Chronic peptic ulcers of the stomach and duodenum are the result of acute ulceration in which a local submucous hemorrhage occurs. Following the hemorrhage anemic necrosis results with lessened resistance and the necrosed tissues are digested by the gastric juice. The continued infection of these tissues prevent the healing of the mucous membrane of the stomach.

TREATMENT

Prevention of focal infection is the most important factor in treatment of systemic infections. Since 90 p.c. of foci of infection are found above the collar and 75 p.c. of these are in the mouth and throat, the necessity of cleansing the mouth, teeth and throat is obvious for prevention of local infection, decay of teeth and general disease.

In many cases the tonsils are the source of development of pathogenic organisms and constitute the portal of entry of these organisms into the lymph and blood streams to the tissues of the body. Infected tonsils should be removed.

Pyorrhea alveolars and alveolar abscesses are generally etiologic factors in systemic diseases. The first when diagnosed should be treated until infection is removed. Alveolar abscesses when recognized by X-ray pictures or otherwise should be removed.

Extraction is justified in order to safeguard the individual from systemic infection.

Gastro-intestinal infections are generally due to swallowing of infectious bacteria in infected food and neuco-pus of the nose, throat and bronchi. These infections may be prevented by obliterating the sources of neuco-pus in the throat and nose and avoiding infected food.

In many cases of gastro-intestinal infections surgery is to be resorted to in order to remove etiologic factors of systemic disease and safeguard health and life.

In treatment of acute and chronic systemic diseases the primary object is to remove the cause of infection. In many cases however it is impossible to remove the focal infection due to serious condition of the patient or to uncertainty of the focus of infection. Removal of tonsils and infected teeth is beneficial to patient if health condition permits. It is however advisable not to stir up too much infection at once as it may be difficult for the body to reach to too large areas of infection.

Acute and chronic appendicitis require surgical removal in order to prevent farther spread of infection through lymph channels and blood stream. Very often appendicitis may be prevented by early removal of foci of infection about the head.

Acute and chronic cholecystitis also demand surgical treatment in order to remove dangerous focus of systemic infection. Such surgical treatment is generally followed by improvement of accompanying chronic myocarditis. Cholecystitis may be avoided by prevention or early removal of focal infection of dental alveoli, tonsils and sinuses.

Gastric and duodenal ulcers can be treated only by removal of causative foci of infection which will prevent recurrence of the ulcers through reinfection.

Acute pancreatitis requires surgical treatment. It is most important due to the relation of the internal secretion of the gland in carbohydrate metabolism.

Chronic pancreatitis may disappear following surgical removal of causative factors.

In treatment of any systemic disease due to focal infection the first step is to remove all primary and if necessary all secondary foci of infection. Repeated examination of the patient is most advisable in order to make sure that all foci of infection are obliterated.

We may remove all the primary foci, but it will take the system some time to throw off the absorbed toxins.

Having the foci of infection removed, the next step is to build up the natural defenses of the body. This may be accomplished by giving the patient mental and physical rest, nourishing food, restorative tonics, pure air and sunshine and in some cases the use of Vaccines and antisera so as to stimulate the formation of specific antibodies.

Following the administration of antisera specific defensive forces are aroused in the body in the form of antibodies, bucocytic phagocytosis and bacteriocidal substances which may modify the course of disease.

Inoculation with attanuated or dead bacteria produces a certain degree of immunity to some infectious diseases. The use of autogenous vaccines may bring best results, especially in chronic infections, where the natural defenses of the body would be increased.

In such cases it is necessary to use an autogenous vaccine of dead bacteria proved to be of the same specific type in virulence and in its elective affinity for that certain kind of tissue as that which causes the infection of the individual who receives the vaccine. In chronic infectious diseases it is different to isolate the micro-organisms which are the etiologic factors in a given case, hence impossible to prepare autogenous vaccines.

In many cases patients do as well under proper hygienic treatment as those inoculated with autogenous vaccines.

In treatment and prevention of systemic disease due to focal infection a close co-operation of physician and dentist is most important. Positive knowledge that is vital and X-ray pictures will guard the patient from any systemic diseases arising, due to focal infection.

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SELECTIONS

A Discussion of the Root Canal Problem

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That the subject is an important one is evidenced by the fre- ency with which it has been presented in its many aspects to rious meetings in this country during the last few years.

My contribution to the discussion takes the form of viewing from the anatomical, histological and pathological aspects rather an from its clinical side.

The essay, I take it, relates to the methods which nature em- oys to prevent or repair injury to the dental and circumdental sues before and during root-canal treatment. For the study of s, it is important and necessary that a clear conception of the ture of the parts involved should lay the foundations for specu- ion and clinical work. The latest teachings of dental anatomy, tology and pathology should be used in so doing; the clinician ould, like the surgeon or physician, more closely co-ordinate observations with their fundamental basic principles.

If nature is allowed to have her own way, she makes no mis- es in her regard for a careful and wise fabrication of different rts of the body, teeth included. If the gross and minute struc- es of the body are looked at in that light the wonder of the ole thing is revealed. To take an instance: Epithelium differs its make-up according to the needs of the organism: the strati- l squamous variety is present when protection is of paramount portance; the ciliated columnar type when it is necessary to get of injurious agencies, particularly in the respiratory tract; the nsitional type where contraction and expansion of organs are uired; the glandular variety when secretion or excretion is de- nded. So it is with the teeth; every part is marvellously ad- ted structurally and functionally with regard to the require- nts of the whole.

Limiting these remarks to the present consideration of the t portions of the teeth, it is immediately obvious that the main ction of the root is to secure for the tooth a firm articulation—ng this term in its correct and concise application—with the al- lar process of the jaws. A mechanical attachment is of the hest importance; the perception of nervous impulses almost of importance. In other words the tissues of the root are not so sensitive as the tissues of the crown, because sensation is but little required in this region.

When the tissues at the apical region are examined, it follows therefore that the hard and soft parts are structurally most strikingly and admirably adapted for the purpose they have to fulfil.

It will be convenient to relate briefly these distinguishing features.

At the extreme apex of the root a tiny aperture exists, which is known as the apical foramen. Each root has one, and normally one only. The vascular channels mentioned by Dr. Grove are adventitious irregular variations from the normal, due to developmental errors or induced by diseased conditions of the alveolo-dental periosteum.

If the shaft of a long bone, say the femur, be examined, it will be noted that there are several holes, in widely separated places, leading into the interior of the bone. In consequence of their transmission of afferent arteries, efferent veins, nerves, lymphatics and small quantities of loose cellular and connective tissue, these are called nutrient foramina.

In this connection the term implies a tube or canal. But in dental anatomy the apical foramen specifically means the aperture leading into the pulp chamber, otherwise called the root canal or pulp canal.

The circumference of the root canal is composed of dentin; cementum does not normally extend into the interior, nor, as far as my observations go, does the periodontal membrane.

The dentin of the root of the tooth differs from that of the crown or cervical region in the facts that the tubes or channels are shorter, smaller, more frequently curved and branched and more numerous than those elsewhere.

Without entering into minute detail such as would be desirable in submitting this subject to a body of general or dental anatomists or histologists, it is sufficient to state that here they measure at their pulp extremities a little more than one twenty-five-thousandth part of an inch in width, that their width diminishes perceptibly as they approach their terminations, that they extend horizontally or at a slight inclination toward the apex of the root, that there may be as many as two hundred secondary curvatures of one tube in one-twelfth of an inch, that their branches are much more abundant than in the crown and frequently anastomose with each other.

What is the reason of this? Why should not the dentinal tubes present the same characteristics here as in the crown?

The answer is obvious. A limited degree of nutrition is re- red, and a still more limited sensitivity is needed in the root n in the crown, for while the dentinal tubes do not transmit ves they are filled with the dentinal fibrils and protoplasm ich serve the dual functions of carrying nutrition to the matrix l supplying feeble sensation from the pulp. The reason why re are so many curvatures in this situation is for the purpose economizing space.

It would be a matter of surprise then, if there could be any preciable amount of destruction by bacterial toxins of the root ue from an infected pulp, or permeability of any soluble medi- nents used in the treatment of the same, through these extreme- ine channels.

Nature thus protects the periodontal membrane, which other- e would readily become a victim to the circumstance of infec- n through the dentinal tubes. When the periodontal membrane nfected and becomes inflamed, it is from the passage through apical foramen of bacterial toxins or septic products accumu- ed in the pulp cavity.

There is still a further and equally important disposition on part of the dentin to protect the cementum and periodontal mbrane. This is the presence of the *homogeneous layer of den-* —an extremely narrow layer of solid material which intervenes ween the granular layer of Tomes on the one hand and the cem- um on the other. With a perfectly sealed apical foramen there be no danger in using any antiseptic or escharotic drug in the ration of sterilizing the root canal by virtue of the existence of s homogeneous layer.

I must join issue with the essayist, who describes cementum he way that many people describe it, *viz.,* a bone-like substance taining innumerable lacunæ with their communicating branches, med canaliculi. Normal cementum contains none such. I speak h the utmost assurance. It is unfortunate that the earliest ongst dental microscopists regarded cementum as similar to eous tissue. They based their observations largely on extracted th which were really diseased, though, no doubt, they believed m to conform to the type seen in natural unaltered conditions.

Normal cementum measures in width a little more than the ge of a safety-razor blade. I have repeatedly measured it with stage and ocular micrometer of the microscope. Its dimen- ns vary from zero to one-hundredth of an inch.

It is probably developed somewhat similarly to the process ed in the growth of certain kinds of bone, *viz.,* by intramembranous or subperiosteal ossification. When sections of the periodontal membrane are cut *in situ,* there are seen on its free surface small round cells incorrectly called cementoblasts, which probably perform functions exactly identical with those of osteoblasts. Microscopically they bear so close a resemblance to these cells as to be indistinguishable from them. It is to be assumed, therefore, that their function—whether they secrete calcified material or not is not as yet precisely known—is the same. Dentin, too, is similarly formed. I have shown many times that odontoblasts are not concerned in the laying down of dentin matrix. After a neurone, the most wonderful cell in the animal economy is an odontoblast, which can be classed as the next most wonderful and extraordinary, for its process—the dentinal fibril—measures often one hundred and fifty times the length of the cell itself. Its functions are higher than that of forming dentin matrix.

As far as the periodontal membrane is concerned this is the analog and homolog of periosteum of bony tissue. It should be properly called the alveolo-dental periosteum, not the dental ligament, nor pericementum nor in the anatomical sense even the peridental membrane, because it is equally distributed over the inner surface of each socket as well as over the surface of the root of each tooth. Roughly it measures normally twice the width of the cementum, *viz.,* one-fiftieth of an inch and less, not including the numerous bays or recesses on the surface of the alveolar bone.

The bone at the apical foramen completely surrounds the termination of the root of the tooth. Normally in man there is no space and no "indifferent tissue" in this region.

Having briefly glanced then at the usual arrangements of the parts ordained for the protection of dentin, cementum and alveolo-dental periosteum by nature a word may be added concerning the production of what Dr. Grove calls "secondary cementum."

Whenever an infection of the periosteum of the tooth occurs, whenever any constantly applied form of irritation is initiated, the cellular elements of this tissue take on active function, and what is at present called hyperplastic cementum is produced. It may be necessary at some future time to change this terminology.

Hyperplastic cementum is full of irregular lacunæ with their canaliculi, entirely different structures to the orderly, well-aranged regular lacunæ of the Haversian systems of compact or cancellous bone. It is a termination of productive periodontitis.

Absorption of both dentin and cementum and bone is a common occurrence. It arises, not from the action of osteoclasts, as is enerally believed, but by the action of certain cells in a granu- ation tissue produced as a result or termination of inflammation. hese cells, probably polymorphonuclear leukocytes, wandering ells and others, exercise a phagocytic function and remove the me salts of the hard tissues in exactly the same manner as they ause destruction of ligatures, foreign bodies, and even silver su- ures employed in the care of fractured bones. Osteoclasts, as rey has recently shown, and my own preparations bear out his ontentions in most remarkable fashion, are not concerned with ragmentation of bone, but probably merely represent groups f effete osteoblasts. Absorption represents the outcome of rare- ying periodontitis.

If the inflammatory process is severe, cells engaged in ab- orption continue destroying the surface of the root, enlarging he apical foramen, and at times passing into the root canal, in he manner demonstrated this morning by Dr. Grove. The pro- ess goes on until repair is more or less effected, and fresh cem- ntum-like material is laid down. At times even osseous tissue nay be found to have replaced dentin and cementum in cases of racture of a tooth and under similar conditions affecting the rowns of teeth, even the enamel itself.

Reverting to the effects of occlusal stress mentioned by the uthor I cannot do better, in conclusion, than quote from a paper hich I presented before the Eastern Association of Graduates f the Angle School of Orthodontia two years ago:

> If slight force that is, slight occlusal stress is applied, an bsorption of the bony tissue to the socket on the side away from he point of delivery, and the slow development of osseous mat- rial on the side next to it would occur, the absorption would be similar in its phenomena to physiological absorption, and the deposition of the bone would be accomplished normally by the osteoblasts which clothe in enormous numbers the surface.
>
> If strong force is applied, an inflammatory condition of the periodontal membrane is undoubtedly induced, which leads to loosening of the teeth, a hyperplastic condition of the cementum, and a local circumdental osteomyelitis of the alveolar process.
>
> If the strongest force is applied . . .a green-stick fracture of one of the alveolar plates is brought about, and an ensuing inflammation of all the tissues is evolved.

—Dental Cosmos

The Dental Student's Career in Great Britain

QUALIFYING DEGREES AND DIPLOMAS.

For admission to the dental profession a student, whether male or female, must pass certain examinations to obtain either (1) a dental degree granted by a University; or (2) a licence in dentistry granted by a Corporation. The Universities which offer degrees in dentistry are: The University of London [M.S. (Dent.), U. Lond.]; the Victoria University of Manchester [B. D. S., M. D. S., V. U. Manc]; the University of Birmingham [B. D. S., M. D. S., U. Birm.]; the University of Liverpool [B. D. S., M. D. S., U. L'pool.]; the University of Leeds [B. D. S., M. D. S., U. Leeds]; the University of Bristol [B. D. S., U. Brist.]; the University of Dublin [B. D. Sc., M. D. Sc., U. Dubl.]; the National University of Ireland [B. D. S., M. D. S., N. U. Irel.]; as well as the Colonial Universities of New Zealand, of Sydney and of Melbourne. Two Japanese diplomas are recognised, viz., Doctor of Dental Surgery (Shikwa-Igakushi) of the Nippon Dental College[D. D. S. Nippon Dent. Coll.] and a like degree of the Tokyo Dental College [D. D. S. Tokyo Dent. Coll.]. The D. M. D. of the University of Harvard and the D. D. S., of the University of Michigan were formerly registered in the Foreign List.

A Licence in Dental Surgery (L.D.S.), admitting to the Dental Register, is granted by the following Universities and Corporatons; Royal College of Surgeons (Eng.); Royal College of Surgeons (Edin.) (this University also grants the Higher Dental Diplomate (H.D.D., R.C.S.Edin.), which resembles a degree in academic value); Royal Faculty of Physicians and Surgeons (Glasgow); Royal College of Surgeons in Ireland; the Universities of Durham, Manchester, Liverpool, Birmingham, Leeds, Bristol, Dublin and St. Andrews. In the Colonial list is Victoria; while under certain conditions a diploma is granted to medical graduates of several Belgian Universities, viz., Brussels, Ghent, Liege and Louvain, and an examination is conducted by a Belgian Provincial Medical Commission [Dent. Dip. Belg.]. The subjects scheduled by these Licensing Bodies are practically the same, being determined by the regulations of the General Medical Council [q. v.], although the standards demanded by the examining Boards vary, some exacting a higher, some a lower degree of knowledge and proficiency.

Further, the *status* of those who obtain a qualification at various centres certainly differs. Whether reasonably or not, the

.D.S., R.C.S.Eng., is commonly thought more highly of than a imilar qualification obtained elsewhere. It is usual for univerity degress in dentistry to be supplemented by a good L.D.S. diloma. The possession of the L.D.S., R.C.S,Eng. is usually rearded as a *sine qua non* to election upon the staff of hospitals, c., and commonly the possession of a medical qualification is alo required. It has become customary for students who have at heir disposal the requisite time and money to acquire not only he L.D.S., but some good medical and surgical diploma such as hat of the Conjoint Boards of the Royal Colleges of Physicians London) and Surgeons (England). This involves giving up uch time to purely medical work, passing additional examinaions and paying additional fees. Those who hold the Conjoint iploma, the F.R.C.S.Eng. or a university degree usually get lected to house surgeoncies, demonstratorships and on to the staff of a dental or general hospital over the heads of those who ossess only an L.D.S. diploma. The present feeling seems to e that as a competent knowledge of medicine and surgery is at east an asset to every dentist the preparation for the examination n these subjects stamps the student as a more efficient and more idely read individual. On the other hand, some authorities regard the L.D.S. as a dental degree and argue that more time being spent on the purely technical work of dentistry rather than on purely medical matters makes the better dental practitioner. The student, however, will be well advised to attempt to obtain the Conjoint or an equivalent diploma in addition to the L.D.S. whenever his means allow him to do so.

EDUCATIONAL COURSE.

Having attained the age of 16, the student must pass a preliminary examination in general knowledge before he can be registered as a dental student. The standard required is not high. There are a large number of centres and corporations recognised by the General Medical Council for this purpose. A list is obtainable at the offices of the General Medical Council, 44, Hallam Street, London, W.I. The standard of proficiency varies very widely, according to the centre selected, although the subjects are the same. The examination selected should cover entry to a medical as well as to a dental qualification in case the candidate desires to obtain a medical diploma at some later stage of his career. It is wise as soon as this step has been taken to select a dental hospital and a general hospital at which the student will eventually enter. As regards London, in some cases, such as Guy's, University College Hospital, and the London Hospital, also in some of the Provincial Universities, both lines of study are carried on at one institution. There are some advantages and some drawbacks to this arrangement. At University College Hospital, although the whole curriculum is carried on at one institution, the actual studies are pursued in different although adjacent buildings. There is a definite benefit to dental students in their rubbing shoulders with medical students who will eventually follow a different line of practice. The provincial schools differ as to the arrangements, and the student who proposes to study in the provinces should obtain a prospectus from the nearest local school. Co-education of male and female students obtains in some teaching dental schools. Many of the schools prepare students for the L.D.S.Eng. as well as for the local diploma or degree. The fees charged at hospitals and schools differ, but it is wise to bear in mind that the cheapest school is not always the most economical choice. A hospital school with a good reputation which attracts an intellectual type of student even if more expensive, commonly enforces discipline and provides exceptionally good teaching. In London, the Royal Dental Hospital and the National Dental Hospital (which is the dental department of University College Hospital) and the dental school of the London Hospital admit female students. Women are not admitted as students to Guy's Hospital Dental School. Of the general hospitals some do not admit women, so that some women students seek their general instruction at the Women's School of Medicine and the Royal Free Hospital. However, under certain conditions several of the general hospitals now welcome women students, and the preliminary studies can be taken at their schools or at University College. A prospectus can in each case be obtained on application to the Dean of the school.

Mechanical Dentistry

The next step is to obtain instruction in mechanical dentistry. Two years of this study must be taken either under a competent dental practitioner (registered) or in the mechanical department of a dental hospital. These two years may be taken before passing the preliminary examination in general education, but in this case are not counted as part of the four years required for professional study. The variety of cases seen and the exclusive instruction given in a hospital mechanical department by persons whose whole time is devoted to teaching are certainly most advantageous to the pupil.

Examinations

The next examination to be passed after registration as a dental student is that concerned with Preliminary Science. The student must have received instruction in CHEMISTRY and PHYSICS at some recognised teaching school: a list of these can be obtained from any of the licensing bodies. If the student aims at taking a medical qualification as well as a dental one he must pass in ELEMENTARY BIOLOGY as well as in CHEMISTRY and PHYSICS, and considering how low the standard in this subject is, we advise all students to take the three subjects, since a knowledge of biology is at least as important to a dentist as are the other subjects. It commonly happens that a student who has entered for the L.D.S. only becomes convinced later of the advantage of obtaining a medical diploma also, and he has then to work up biology at a time when his or her energies would be much better devoted to technical dental work. A word of caution may here be given about examinations regulated by synopsis. It is a fatal mistake to work *to* the synopsis. No question can be set which does not demand a greater knowledge than appears to be covered by the synopsis. The examiner and the examinee never look at that document from the same standpoint. In this fact lies the danger of trusting to cram books which may be excellent for revising knowledge just before an examination, but are a source of failure if used to ''get up'' the subject by one who has received no sufficient grounding in it.

The general knowledge examination should be passed before leaving school: then preparation for the preliminary science examination should be undertaken and passed before technical work is commenced. Some dental schools teach chemistry and physics in the same building as mechanical dentistry and this avoids the loss of time involved in coming and going between two teaching centres.

All dental students and recently qualified dental practitioners should study the various Acts of Parliament which control dental practice in the United Kingdom and Colonies. They are to be found in the Dental Register, pp. 5-8 and 14-25. Modification in the curriculum will take effect in 1923.

Extracts

GOLD INLAYS.—In order to ensure an investment of uniform consistency, it is advisable to measure the investment material and water for each mix. This will also result in a saving of material. Both water and investment material should be used at room temperature. This uniform temperature can easily be had at all times if a bottle of water and a can of investment material are always allowed to stand side by side on the laboratory bench. Most investments in which silex and plaster of Paris are the principal ingredients should be mixed to a thick, creamy consistency. The pattern should be covered with a thin film of material, using a sable-hair brush as an applicator. The investment is painted on the pattern with a brushing motion toward the margins—not a stippling motion—in order to avoid the lodgment of air bubbles on the pattern or the entrapment of air on the cavity side of the wax. More material is applied until the entire pattern is thickly covered; then the ring is placed in positon on the base, and the investment poured into it until the ring is full. The ring should not be tapped while the investment is being made, as that may cause air particles to unite and form bubbles, some of which will settle on the cavity side of the pattern and result in nodules of gold on the inlay. After the expiration of fifteen or twenty minutes, the base and sprue former may be removed and dissipation of the wax should begin.—R. E. Blackwell, D. D. S., in "Journal of the N.D.A.".

Indigestion

Indigestion occurs through the fermentation of the septic contents of the stomach, causing flatulence and heartburn; more rarely, pain and vomiting. This entirely unnecessary and avoidable gastritis causes probably more dull misery throughout the world than any other complaint. Insomnia is a very characteristic symptom of pyorrhoea. You are all acquainted with cases of rheumatism, both acute and chronic, where the source of infection has been traced to the mouth. There is the sub-acute polyarthritis, with acutely inflamed joints, and there is that deplorable condition known as rheumatoid arthritis, for which we doctors are largely responsible. My belief is that over three-quarters of the cases of rheumatoid arthritis owe their origin to pyorrhoea, and that three-quarters of the cases are therefore avoidable. But the trouble has been, firstly, that many doctors have been too easy-going with their patients, and have compromised over treatment, and secondly, there are still a lot of dentists who think they can see through the alveolus with the naked eye, and therefore neglect radiography. Forgive my candour. I am thinking not of you, but of those few men who are careless of rigid examination, or, worse still, who allow themselves to be persuaded by their ignorant patients. We have such practitioners in our work; you have them in yours.—D. A. Crow, M. B., Ch. B., in "British Dental Journal."

Vital Facts About Cancer

1. During the Great War the United States lost about 80,000 soldiers. During the same two years 180,000 people died of cancer in this country. Cancer is now killing one out of every ten persons over forty years of age.

2. Many of these deaths are preventable, since cancer is frequently curable, if recognized and properly treated in its early stages.

3. Cancer begins as a small local growth which can often be entirely removed by competent surgical treatment, or, in certain external forms, by using radium, X-ray or other methods.

4. Cancer is not a constitutional or "blood" disease; there should be no thought of disgrace or of "hereditary taint" about it.

5. Cancer is not a communicable disease. It is not possible to "catch" cancer from one who has it.

6. Cancer is not inherited. It is not certain even that a tendency to the disease is inherited. Cancer is so frequent that simply by the law of chance there may be many cases in some families, and this gives rise to much needless worry about inheriting the disease.

7. The beginning of cancer is usually painless; for this reason its insidious onset is frequently overlooked, and is too easily neglected. Other danger signals must be recognized and competent medical advice obtained at once.

8. Every persisting lump in the breast is a warning sign. All such lumps are by no means cancer, but even innocent tumors of the breast may turn into cancer if neglected.

9. In women continued unusual discharge or bleeding requires the immediate advice of a competent doctor. The normal change of life is not accompanied by increasing flowing which is always suspicious. The return of flowing after it has once stopped should also be considered suspicious. Do not expect the doctor to tell you what the matter is without making a careful physical examination.

10. Any sore that does not heal, particularly about the mouth, lips or tongue, is a danger signal. Picking and irritating such sores, cracks, ulcerations, etc., or treating these skin conditions by home remedies, pastes, poultices, caus-

tics, etc., is playing with fire. Warty growths, moles or other birthmarks, especially those subject to constant irritation, should be attended to immediately if they change in color or appearance, or start to grow. Avoidance of chronic irritation and removal of just such seemingly insignificant danger spots may prevent cancer.

11. Persistent indigestion in middle life, with loss of weight and change of color, or with pain, vomiting, or diarrhoea, call for thorough and competent medical advice as to the possibility of internal cancer.

12. Radium is a useful and promising means of treatment for some kinds of cancer, in the hands of a few skillful surgeons and hospitals possessing sufficient quantity of this rare and very expensive substance; it must not be thought of as a cure-all for every form of cancer.

13 Open warfare by open discussion will mean the prevention of many needless deaths from cancer. The common belief that cancer is a hopeless malady is partly due to the fact that cases of successful treatment are frequently concealed by the patient and his family, while cases of failure (too often resulting from delay) are apt to become common knowledge.

14. The American Society for the Control of Cancer is a league enlisting the principal agencies and individuals in the United States and Canada who are striving to make headway against this formidable disease by a campaign of public education to make wider use of present knowledge in its prevention and cure. Annual dues are $5.00. Larger contributions are solicited. Checks payable to Howard Bayne, Columbia Trust Company, New York City, Treasurer. If the cause appeals to you, you can help by Joining the League.

Editorial

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Vol. XXXIII. TORONTO, NOVEMBER, 1921. No. 11

The Canadian Dental Meeting

The tenth biennial meeting of the Canadian Dental Association will be held in the King Edward Hotel Toronto, May 15, 16, 17, 18, 1922. Already the program is well under way. It will be largely a clinical meeting, interspersed with a few well-selected essays. Provision is being made for seven or eight hundred members. The clinics will be so arranged that every member will see all the clinics which come in his choice.

The Canadian meeting will be held jointly with the Ontario Dental society as has been done many times before.

The attendance will be unusually large because of the importance of the organization and its influence on the profession. A national society such as this has attractiveness for many diverse interests. It was through this organization that Canadian dentistry and in fact Canada was recognized by world dentistry. There is an official dental body through which the nation may speak. The Dominion Dental Council owes its organization to the Canadian Dental Association. It has done much to unify dental laws, education and practice in Canada. The organization of the C.A.D.C. is an example of its efforts. The cancellation of the dental sales tax was brought to a satisfactory conclusion by one of its committees. The president is Dr. F. H. Whittaker, Edmonton, Alta. and the secretary Dr. E. A. Grant, College St., Toronto.

The Treatment of Cancer

Dr. Gaylord, Director of the New York State institute for the study of malignant disease, Buffalo, N. Y., recently gave a report of some of his observations for the past twenty five years. The address was given in connection with a campaign for the prevention of cancer.

It was the opinion of the speaker that cancer was not the hopeless disease it was considered to be twenty-five years ago. Surgical treatment had made wonderful advances but, in addition to this, a new weapon in the form of radiation, had saved many lives. There would seem to be several varieties of cancer from the view-point of cause and some of these varieties were more amenable to treatment than others. Some cancers had been cured spontaneously which would seem to indicate that there was developed in the body a certain resistance. The chief reliance in prevention was early recognition and treatment. There was always an abhorrence of surgical treatment which accounted for so many delays in treatment.

Dr. Gaylord had just returned from a trip to Germany where the treatment of cancer by radiation has made such progress that cancer of the uterus is rarely attempted by surgery. He found many clinics where surgery and radiation were carried on at the same time and others in which radiation was used until the size of the tumor was such as might be operated upon. It would seem that practically all superficial cancer can be cured by radium or X-rays. It would seem that it makes little difference which form is used provided the correct dosage is obtained. Deep cancer is more difficult to treat but many of these are successfully reached. From a dental view-point, it was gratifying to know that cancer of the tongue and lips are very satisfactorily treated by radiation. Surgery in such cases is often disfiguring.

Editorial Notes

Life is too short to waste.

Veneer often outshines the solid wood.

In selecting a location "Look before you leap."

The Dental inspector, Brantford, was in a street car accident which gave him a shaking up.

Dr. Sebban, Stratford, was charged with causing the death of a 14 year old boy in a motor car accident.

Mrs. W. A. Brownlee, Grimsby, wife of Dr. W. A. Brownlee and mother of Dr. Brownlee, Winnipeg and Dr. Brownlee, Grimsby, died suddenly, October 27, 1921.

Dr. Stanley Collyer does not take much stock in some of the modern shifts to explain the causes of dental caries. He says too often the same theories do not act in all parts of the world.

There are thirty-five dentists working part time in the schools of Toronto. There are five hospitals getting daily service also. Dr. E. A. Grant is in charge. The service was begun in 1911, under the directorship of the late Dr. Doherty.

Dr. Thomas L. Gilmer, Chicago, gave the Calgary dental society a week's post-graduate course on Focal infections, chronic alveolar abscess, pyorrheaic alveolar abscess, cysts and tumors, diseases of the maxillary senus, infections of the mouth.

An Indian chief once said to a restless white man: "O Brother! you will never know the blessing of doing nothing and thinking nothing; and yet, next to sleep, that is the most delicious. Thus we were before birth and thus we shall be after death." The restless and ambitious ones might well con over this.

By some mishap, the appointment of school dentists to the schools of Calgary has caused a good deal of newspaper comment. It appears the age of the appointees is the point of contention. One writer very cogently asks why the chief school physician should have anything to do with the appointment. Dentistry and medicine are not one and the same organization nor has one any rights of superiority over the other.

Referring to matters of dress for the dentist, it is well said: "Though wrong the mode, comply. More sense is shown in wearing others follies, than our own."

You never heard of a swindler or a confidence man or a gambler who dressed shabbily. These men's souls are in their clothes.

Dr. R. J. Husband, Hamilton, died suddenly in his home at Burlington Nov. 1st. Dr. Husband was among the older men of the profession and held many of the high places in the gift of his confreres. For many years he represented District No. 4, on the Board of Directors of the Royal College of Dental Surgeons of Ontario.

The International Dental Federation held an unofficial meeting in Holland in September at which it was decided to hold a formal meeting in Madrid, Spain, in 1922. It also accepted an invitation to hold an International Dental Congress in Philadelphia in 1926. The last congress was held in London and came to a hurried close in August, 1914, on the declaration of war.

The Lethbridge Herald is informed by the School Board that there will not be a dental clinic in connection with the schools of that city but the chief medical officer will make examinations of the children's teeth and will send such as need treatment to a dentist to have treatment made at the parents' expense. It is very interesting to an experienced dentist to hear of the simplicity of making a dental examination or diagnosis. Dentists of years of experience often find great difficulty in making a dental examination but a physician, a nurse or a teacher, in the opinion of the School Board, can do it satisfactorily.

Dr. Countryman, the school dentist for the city of Saskatoon, makes the following report on the year's work and compares the results with the previous year.

It is more than pleasing to see that the work of the past few years among the children is bringing such splendid results, says Dr. Countryman.

The summary of this year's work sets forth 3,952 examinations made. Of these 1,124 or 28.44 per cent., were classed as "O. K."; 1,218, or 30.82 per cent., as "good"; 1,340, or 33.91 per cent., as "fair"; and the remainder, 270, or 6.83 per cent., as "poor".

The summary for 1919-20, from which comparisons are drawn, showed 3,451 students examined. Of these only 733, or 21.24 per cent., were classed as "O. K."; 560, or 16.22 per cent., as "good"; 1,488, or 43.12 per cent., as "fair"; and 670, or 19.41 per cent., as "poor."

"Needless to say, I am very well pleased with the results shown. There is really no need for me to make any comments, however," Dr. Countryman added, "for these figures speak for themselves."

The Regina Dental society resumed its sessions October 11, 1921. Dr. W. J. Mooney gave a paper on reading X-rays.

A dental clinic will be established in connection with McGill University settlement work. Dr. Goldwater has offered his services.

Dr. C. P. Banning presided at the inaugural meeting of the Winnipeg Dental Society held at the Fort Garry Hotel. A campaign of oral hygiene was proposed in connection with health organizations.

There are two Red Cross dental cars at work in Saskatchewan. No. 1 is in the Battleford district and No. 2 is in Excel district. The dentist gives addresses to the children as well as treats their teeth.

The Calgary school Board is saving money by employing only one dentist and spending it in the purchase of scales to weigh the children. This looks like doubtful economy. Dr. Heney will give part time. The advisability of employing young men was seriously questioned by members of the board. It was thought that they only took the position for a time intending to go into private practice.

An evidence of the advance being made in dentistry in Canada is seen in the announcement made in this issue that the Lavoris Chemical Co. of Minneapolis, Minn., is opening up a branch factory in Toronto for the manufacture of its products. The management feels that in order to cope with its increasing business, a Canadian factory is necessary to insure thorough distribution and its Canadian business will hereafter be handled from 1-3 Jarvis St. Toronto.

Book Reviews

The American Illustrated Medical Dictionary. A new and complete dictionary of the terms used in medicine, surgery, dentistry, pharmacy, chemistry, nursing, veterinary science, biological medical biography.

Pronunciation, derivation and definition by W. A. Dorland, A.M.M.D., F.A.C.S.

Eleventh edition revised and enlarged, published by W. B. Saunders Company, Philadelphia and London, 1921.

This is the most useful book in a dental or medical library. It contains over eleven hundred pages and yet is so compact that it is convenient for reference. It is well prepared for its purpose, well printed and well bound. The illustrations add materially to its usefulness.

Notes on Dental Surgery and Pathology
By T. W. Widdowson
Published by John Bale, Sons & Danielsson, London

This a work of unusual merit. It classifies a great deal of Dental pathology in an orderly fashion. It is especially adapted for candidates who have a knowledge of the subject and wish to review for an examination. It cannot be recommended as a text book and yet it is a quick reference book for the general practitioner. In less than 200 pages it covers all the pathological conditions of the human teeth, gums and jaws. It is an excellent set of notes from which to lecture or write a text book. Its teachings are sound. There is evidence of care in preparation and great discernment on the part of the author in selecting the subject matter. There is a wide blank margin for notes. It is a book bred of short intensive examinations as a test of the right to practise.

The American Year Book of Anaesthesia and Analgesia
By F. H. McMeehan, A.M.M.D.
Publishers, Surgical Publishing Co.
15 East 26th. St. New York.

This is a double column book of 500 pages outside of the advertising pages in the front and back. It is a selection of the best articles on the subject during the period of 1914 to 18. It is a rather showy publication, red binding with gold lettering size 8 in. by 11in. too large to go into ordinary bookshelves. The reviewer wonders if the sale of the book will pay for its publication. Beyond doubt it is a great convenience to have collected under one cover all the best on the subject for the years covered, the special chapter on dental anaesthesia is filled with the best authors' writings.

Operative Dental Surgery
By Thomas Goodhugh

Lecturer on Operative Dental Surgery to the Incorporated Dental Society.

Published by Bailliere Tindall & Cox, London

This is a well gotten up book of 334 pages of text and a good index. Many of the illustrations are well selected to illustrate certain truths in dentistry. The text is a queer mixture of worldly wisdom in dental practice and ignorance of recognized dental education. There is great clearness of expression but a total lack of present day knowledge of the subject. On page 30 appears this information: "The root of the tooth is completed by the elongation of the pulp, which takes between four to six years to accomplish after the eruption of the crown at the gum margin." The reviewer is often struck with the wisdom of some of the teachings only to find in the next paragraph evidence of total ignorance of modern practice. The whole subject of dentistry is covered from the eruption of teeth to cleft palates.

DENTAL SOCIETIES

American Institute of Dental Teachers

The following is the programme for the meeting at the Windsor Hotel, Montreal on Jan. 23, 24, 25, 1922 of the American Institute of Dental Teachers:

MONDAY—23RD JANUARY, 1922

9.30-12.30: Registration; Welcome; President's Address; Reports.

2.30-5.00: 1. What should the dental student be taught so that he may be the better prepared to prevent Cancer of the Alimentary Tract; 2. What should a dental student be taught in reference to general diseases and their relation to local infections. Thomas B. Hartzel, Pres. of the National Dental Association.

Reports.

6.30-10.30: Banquet.

TUESDAY—24TH JANUARY

Sections:

9.30-12.30: Reports:

Section 1. J. H. Phillips, Chairman.—What should the dental student be taught so that he may be able to prevent dental caries by mechanical procedures.

Section 2. R. D. Thornton, Chairman—What should the student be taught so that artificial dental appliances he inserts, may not cause dental caries or injury to the peridontal tissues.

Prosthetic,—W. E. Cummer.

Crown & Bridge,—Forest H. Horton.

Orthodontia,—Frank Casto,—discusser J. B. Morrison.

2.00-5.00: Entertainment and Schools.

8.00-10.30: *Orthodontia;* its place in a Dental College course. What should be taught didactially, technically and clinically. Johnson, Mershon, A. D. Black, Schlonker, A. H. Hipple.

Ethics, Public Service, Economics: What should the dental student be taught so that he may have a correct appreciation of his relation to affairs of life. Ethical, political, economical, financial, professional.—Sir Robert Falconer, Pres. of the Toronto University.

WEDNESDAY—25TH JANUARY

9.30-12.30: What should the dental student be taught so that he may be prepared to prevent dental caries by,—

1. Diet,—Percy Howe.
2. Prophylaxis & Mouth Hygiene,—Bruce Taylor.
3. Drugs,—H. B. Rickart.
4. Operative Procedures,—(Note) which will appear in Section 1.

Reports and Business.

1.30 The Pre-dental Year—Dr. Eve, Montreal; F. R. Henshaw, Indianapolis; H. M. Semans, Columbus, O.; Wallace Seccombe, Toronto, Ont.

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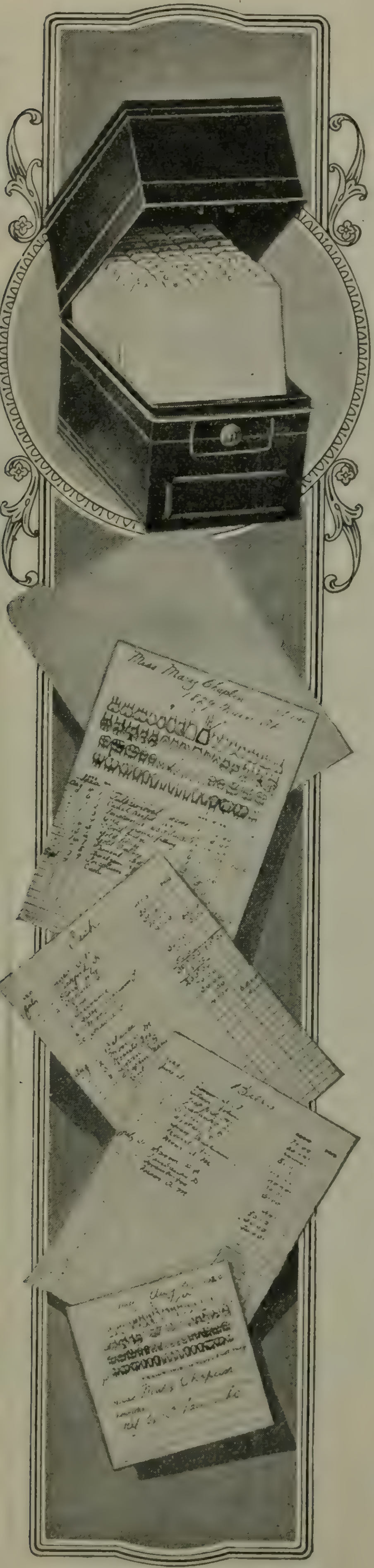

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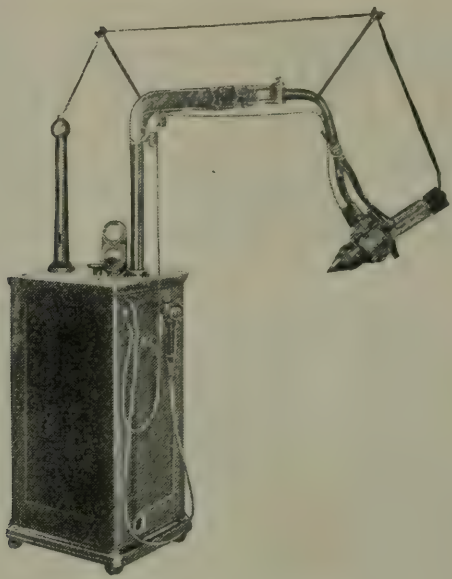

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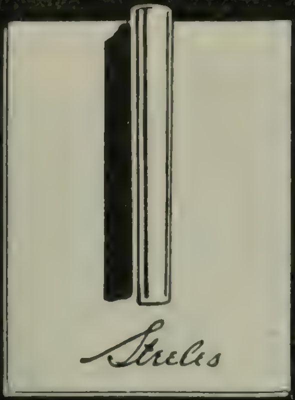

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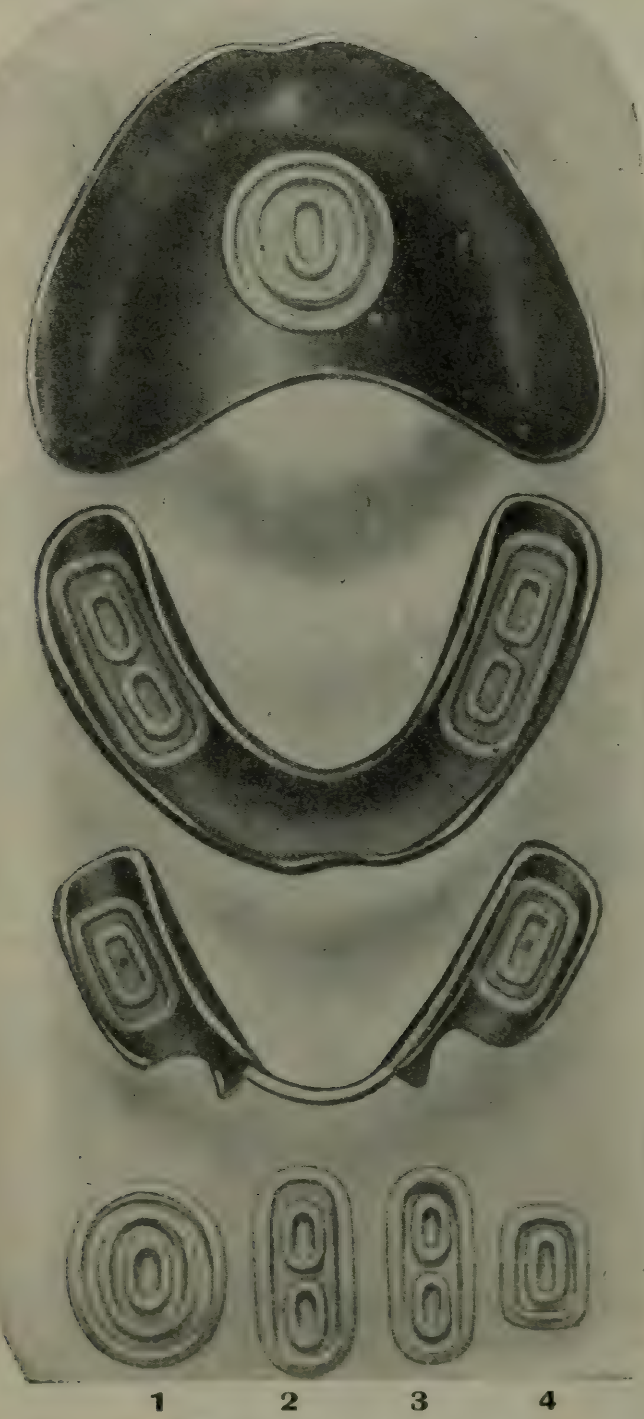

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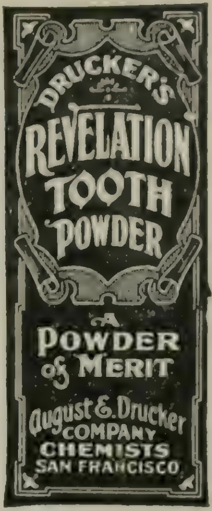

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Vol. XXXIII. TORONTO, DECEMBER, 1921 No. 12

ORIGINAL COMMUNICATIONS

Oral Focal Infections and their Treatment

T. Sydney Smith, D.D.S., San Francisco, Cal.

Read before the Canadian Dental Association, Ottawa.

IT affords me a great deal of pleasure to be with you, not only because we are interested in the same scientific problems, but also because I am among my own people—I was born near Hamilton. I feel therefore that I am before a sympathetic audience, one that is sympathetic from every standpoint.

I regret that I must give you a talk instead of presenting a carefully written paper, but the invitation to address you came after I had started on my vacation, so I could not do otherwise. In giving a talk my remarks may be too disconnected, but I hope in the main they will be beneficial.

I shall, at the outset, lay considerable stress on the dangers which arise from small focal infections, but I want to be conservative in this presentation, as there is great danger of letting the pendulum swing too far one way, or too far the other. It would be a mistake to over estimate the importance of focal infections, but it would be a worse mistake to under-estimate them. I became aware of the danger of these focal infections before the role they play was generally recognized. That I may be clearly understood in this connection, I shall tell you briefly how I came to make the discovery.

When I commenced the practice of dentistry I was surprised to find how diseased the average patient's gums were, and I turned at once to our literature to see what the leading men were saying about these diseased conditions and what they were doing for them. I was impressed during this investigation by two outstanding facts. First, they said that the recession of the gums could not be prevented, and that pyorrheal pockets could not be cured. This was a frank admission of failure; they had nothing therefore to give me. In the second place, the foolishness of the things they were doing for these lesions was beyond comprehension. They used surgical instruments to remove the calsic deposits from the roots, but they immediately introduced some acid into the wound to dissolve any particles of calculus the instruments had left on the cementum. This showed that they had no confidence in the thoroughness of their surgery. It is necessary to remove the last trace of calculus with the instruments, and in addition to this one must surgically freshen the surface of the cementum, which is extremely thin on the gingival third of the root, without exposing the dentine at any point. These men did not seem to appreciate that an acid which would remove the calculus would at the same time damage the root and destroy the liberated blood and many of the fixed cells. These tissues should be left in a condition which would permit them to take part in the healing.

After applying the acid, they next introduced some powerful germicide into the wound to kill the micro-organisms which their surgical instruments had failed to remove. Although the medical men were also using germicide agents to sterilize wounds at that time, it seemed incredible to me that bacteria, which must be boiled, or bathed in some medicinal agent which is as destructive to them as boiling, could be killed in the wounds by those agents without destroying much of the tissue.

Then, as though the acids and germicides had not wrought destruction enough, they deliberately poked pumice clear to the bottom of the wounds with orange wood sticks. I believe there is nothing in surgical history which equals the stupidity of this act, yet it was done by men who had been exposed to science while receiving their dental training.

I felt, therefore, that if I was to accomplish anything in the treatment of these lesions I must make a thorough study of the subject myself. I conducted this investigation by main strength and awkwardness, perhaps chiefly awkwardness, but arrived at the decision that it is biologically possible to cure a pyorrheal pocket. I had seen enough through the microscope to convince me, and nothing could shake that belief. I could see, however, that to attain this result one would have to operate with almost a microscopic degree of accuracy, and thought I might not be able to accomplish this, but made the attempt. At first I failed, and continued to fail for some time, but my faith was not shaken. At last, in January, 1903, a deep chronic pocket which I had treated surgically, healed so rapidly and perfectly that there could be no doubt that a vital reattachment of the tissues had taken place. I could not repeat this result for some time, but eventually got a second rapid and perfect healing. The third one came more easily. From that time on the percentage of perfect healings increased as I improved my surgical technique.

You can see, then, that the successful treatment of pyorrheal lesions was not an accidental discovery, as it was based on scientific principles, and was anticipated by me. But I afterwards discovered two very important things, and I wonder today that I had not also anticipated them. The first was, that when I did the necessary work to cure the pyorrheal pockets and gave sufficient prophylactic care to prevent their recurrence, the teeth were rendered almost immune to caries. In the second place, I found that patients who had been suffering from localized as well as general systemic diseases were either greatly improved or permanently cured when I eradicated all of the focal infections. When this result occurred in some scores of cases I felt it my duty to acquaint the members of the medical profession with the discovery.

I went to one of our leading medical educators and told him what I had observed. He listened until I began to enumerate the diseases which may be caused by these small focal infections. But when I included acute and chronic nephritis, he interrupted me and went into a long scientific explanation to show that such a thing was impossible. Today this same man is one of the strongest believers we have in the danger of focal infections, and he includes acute and chronic nephritis among the diseases which arise from these sources, just as I did in those days.

A case from my own practice will help us to see how the various organs and tissues may be affected by comparatively small septic spots. In April, 1914, a prominent medical specialist came to me for the treatment of his gums. At that time he was a strong man in his early forties. Two of his upper molars were so badly affected with pyorrheal conditions that I made no attempt to treat them, and, although they were vital teeth, I advised him to have them extracted. I also requested him to have a lower pulpless bicuspid radiographed. He intended to follow my advice, but as he was a busy man he neglected it. On the first of May, 1916, he was stricken with a very inflammatory type of arthritis which apparently affected every joint of his body. In addition to this, he had a severe attack of gastritis which caused such pressure on the diaphragm that it almost stopped the action of the heart. He was attended by the best medical men that could be secured, but they could find no cause for his serious condition. When I heard of his case, I sent them word that he had these septic teeth which should be extracted, as they might be the source of his trouble. About the first of June, they took me seriously and asked me to come and extract the affected teeth. They made this request of me because he was so weak they did not want a stranger to come near him. Although I had not extracted any teeth for years, I yielded to their request and went to his home. But the physicians, after holding a consultation, decided that he was too weak to stand the strain of the extractions; they thought the shock would kill him. He grew steadily worse, and developed double pleurisy and pericarditis. About the end of June, his physicians again requested me to extract the teeth, saying that he did not have one chance in a million to recover unless this be done; it was their only hope. He was so weak he could neither swallow nor expel his saliva; a condition commonly known as the death rattle. On the third day after the teeth were extracted he began to improve, and gradually regained his former health. Today he is stronger than he had been for ten years preceding this illness. By these three extractions we saved the life of this useful man to continue his important work.

If time would permit, I could cite case after case where marvelous cures have been brought about by the complete eradication of oral septic foci. I believe, therefore, that we should attach great importance to them, but we must remember that any other septic spot will also endanger the health.

Septic foci may be divided into two clauses, primary, and secondary. A small septic spot at one point may cause a more serious infection in some other organ or tissue no matter how far apart they may be in the body. The latter would be a secondary focus. I believe that nearly all oral infections are primary foci.

Oral infections should also be divided into two groups; the apical, which result from the death of the pulp, and the periodontal, or those which commence in the gingival sulcus. It has been commonly believed and publicly stated that the apical infections are more dangerous to the body than pyorrheal lesions, because the former are under pressure, while the latter drain freely into the mouth. I believe this supposition is a mistake. Apical infections are dangerous; there has been much evidence to prove it. But pyorrheal lesions are more dangerous for several reasons. In apical infections the danger appears to arise from the presence of anaerobic strains of the streptococcus veridans. Pyorrheal pockets also contain these anaerobic strains of the streptococcus veridans in the bottom of the lesions, where the depth of the pockets, and the symbiotic influence of other organisms force them to live and develop in a low degree of oxygen tension. But these same pockets also contain aerobic strains at the top of the lesions, where the organisms live in a high oxygen tension. In addition to these, the central portions of the pockets contain strains which range all the way from these strict aerobes to the anaerobes. When these various strains of bacteria enter the blood stream, I believe that they must of necessity possess much more highly differentiated elective localization properties than the pure strain anaerobes which are to be found in apical infections. I am aware of the fact that some scientists do not believe in this theory regarding the elective localization of the organisms; however, there can be but little doubt that both the living organisms and their toxins enter the circulation from apical infections in spite of the more or less incapsulated character of the granulomatous areas. If this is the case, then the greater number of open blood vessels which line the unhealed surfaces of pyorrheal pockets furnish the organisms with a far more abundant path of entry than is found in apical infections.

The very fact that pyorrheal pockets are open lesions draining into the mouth makes them more dangerous for the body than apical infections, because they constantly receive new strains of bacteria from outside sources, against which the tissues of the body are not immunized. These new strains must differ tremendously in the degree of their virulence, and I believe that this, in a measure, determines their pathogenic specificity.

In the fourth place, there is usually much more tissue involved in periodontal than in apical infections. This is especially the case when we include, as we should, the incipient gingival infections. I am becoming more and more convinced from the results of my work that these slight infections, where the gingivae are red, or have a tendency to bleed from ordinary brushing, are very dangerous to the general health

If it is true, then, that chronic periodontal lesions are dangerous primary septic foci, and that correct prophylactic care will not only prevent their occurrence but also render the teeth almost immune to caries, it is surely the duty of every dentist to give the greatest attention to preventive measures. It is deplorable that so many dentists either neglect to give their patients' teeth the necessary prophylactic care, or employ girls who have little or no dental education to do this work for them, that they may spend their time patching up defects which should have been prevented. Many girls have the delicacy of touch and the endless patience which one requires for prophylactic work, if they had sufficient training. But why should they be permitted to do this, which is by far the most difficult and important branch, without having a full dental course, while they are debarred from other operations? There is absolutely no other branch of dentistry which requires a broader or more thorough dental education than prophylaxis, because every other operation is fundamentally based on it, and there is no operation where one is so liable to do irreparable damage. To be at all efficient, one must have both a theoretical and practical knowledge of general dentist- be legally qualified to perform this, the most important den- ry, then add to this his prophylactic training. If girls are to be legally qualified to perform this, the most important dental operation, with only a partial dental education, why should they not be permitted to perform all other dental operations with the same amount of training? The trouble is, dentists are making easy money by paying these girls a moderate wage, and charging the public big fees for their services. If we, who have been granted dental diplomas, are to degenerate into mere business men in this branch of dentistry, then why not do the same in all the branches?

Since preventive dentistry is so essential, we must be able to detect the slightest defect in the supporting structures of the teeth; we must know perfectly normal gums when we see them. It is surprising how many dentists think that healthy gums are red. As a matter of fact, gums are never red unless they are irritated or diseased. It would not be quite enough to say that healthy gums are pink. One should add at least one adjective, and say they are light pink.

Another mistake which must be corrected, is the theory that the gums eventually recede as the result of a natural physiological process. The form of the gums is just as important as the form of the teeth. When normal they constitute a series of almost perfect inclined planes which not only permit the food to pass over from the direction of the crowns of the teeth without injuring them, but which actually require a friction from that direction to cleanse and stimulate them. But when the thin gingival margins of the gums are lost or become swollen, or when the septal points are shortened, they obstruct the passage of food and are bruised and injured instead of being benefited by it. It does not seem reasonable, then, that nature should give us such perfect tissues to meet so great a need during the early part of our life, and then deliberately remove them by a physiological process during middle life or even in old age, since they are needed then just as badly. Long experience in prophylactic work has convinced me that gums do not recede when cared for properly. But, on the contrary, I find that nature puts forth tremendous efforts to retain them, and makes the most of every bit of assistance we render. I have even seen the tissue re-cover denuded labial portions of roots if the cementum was intact, when gentle surgical aid was given at intervals. This result was secured to a considerable degree for Mr. H.|, the patient whose mouth some of you examined during my clinic at the Panama Pacific Dental Congress, in 1915. When he came to me for treatment some years previously, the labial surface of the root of the upper right lateral incisor was denuded for a distance of at least seven millimeters above the enamel margin. When you saw him in 1915, there was less than three millimeters of the root denuded. And, as you will remember, the gum was firmly attached to the root and looked like normal tissues.

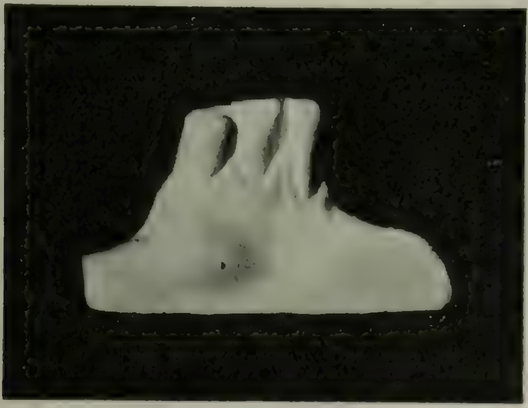

Fig. 1 is a photomicrograph of a plaster model of the teeth of a lady over ninety two years of age, showing the septal points of the gums still retained.

Fig. 1, which is a photograph of a plaster model of the teeth of a lady over ninety-two years of age, supports my contention by showing that the septal points were still retained. The significance of this will be more apparent when I state she had been wearing a partial rubber denture, and had paid little or no attention to the cleaning of her teeth. One feels like asking how much longer we would wish the septal points to remain intact?

Few children's mouths receive sufficient care to give the teeth and their supporting structures a proper start. As a rule they eat such soft foods, and give the gums so little artificial stimulation that the gingivae remain red and swollen after the eruption of the teeth, instead of developing a thin tough margin which slightly overlaps the enamel. I was more than ever impressed with this fact just before leaving home. I wanted to find a plaster model of a young mouth with normal gums, and examined several hundred models, but did not find one with normal gums around all of the teeth. In many cases all of the gingival margins were swollen. Others showed that the septal points were hypertrophied.

When the gingivae are even slightly irritated and red they develop acids which soon produce carious spots on the crowns

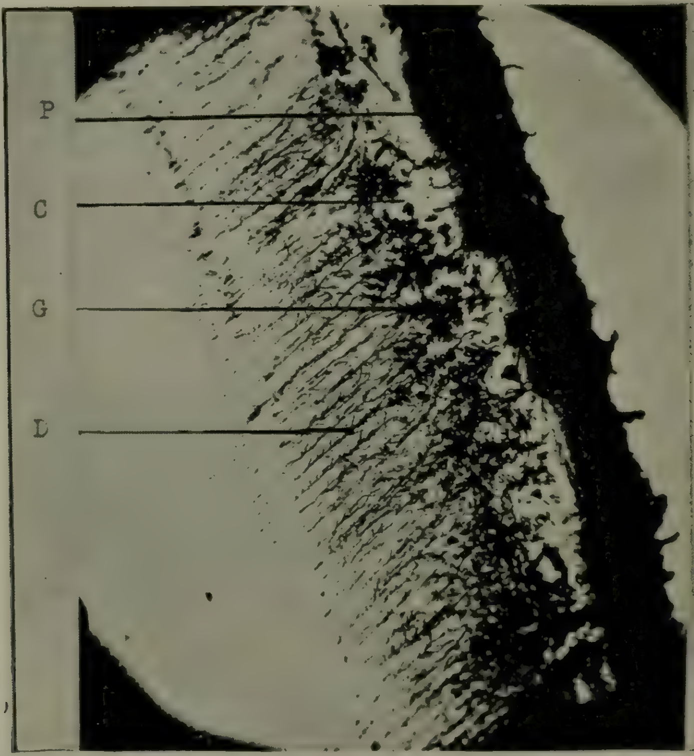

Fig. 2, which is the first of the series of photomicrographs shows a longitudinal section of the developing root of the human tooth with the first lamelia of cementum forming in disconnected segments around the granular layer of the dentine. P, the pericementum. C, the first lamelia of cementum. G, the granular layer. D, the dentinal tubuli.

These photomicrographs were prepared by Dr. John S. Engs, of Oakland, California.

of the teeth. These acids are apparently of bacterial origin, because they disappear as soon as the gums are restored to health. Acids of this character quickly dissolve out the cement substance from between the enamel rods, giving the affected portion a white appearance. This is followed by the breaking down of the enamel rods, and the formation of a carious spot.

No matter how much the septal points are hypertrophied they should not be cut off. They very soon return to normal if the tooth surfaces underneath them are thoroughly cleaned and polished, and if this is followed by sufficient brushing to maintain cleanliness and stimulate the circulation. When this is done, the acid action immediately ceases. I have many patients of all ages who have not had one new cavity develop since their teeth have been given this sort of care. Some of these patients have gone more than fifteen years without any new cavities developing and I see no reason why they should not continue to have this experience. Are not such preventive measures worthy of receiving our chief attention?

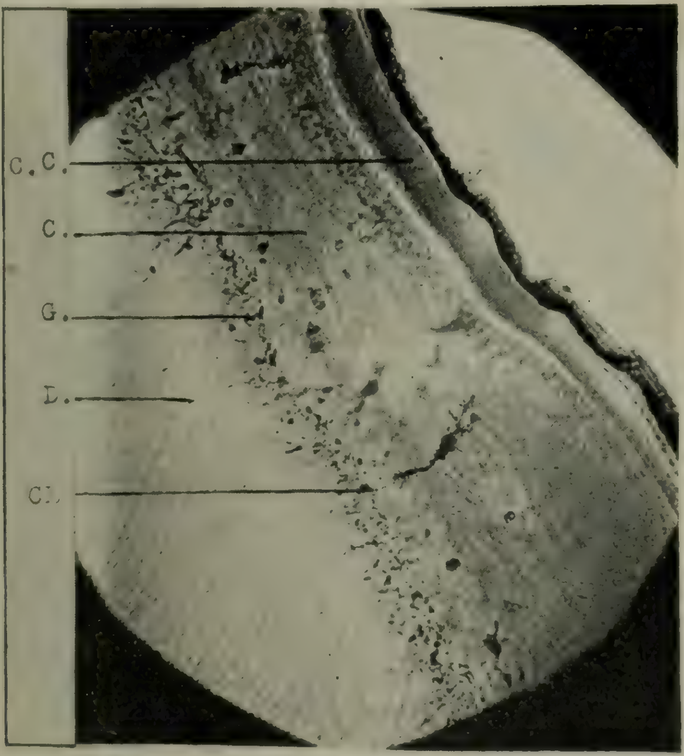

Fig. 3. Photomicrograph of a longitudinal section of the root of a cuspid tooth. extracted when the patient was sixty-five years of age. In this case the first formed lamella of cementum is just as cancellous as the rest of the cementum, and in addition to this some canuliculi of the cemental lacunae are directly connected with the granular layer. These canuliculi are so irregular in form that the section, being cut in a single plane, makes some of them appear as disconnected dots, when in reality they were continuous passages in the root from which the section was cut. C.C., The outer compact lamella of cementum C. The central portion of cementum. G. Granular layer of the dentine. D., The dentine. C.L., The canuliculi of a cementum lacuna.

Although it is possible to maintain the health and form of the supporting structures of the teeth throughout life, we are confronted with the fact that most of our patients have not had sufficient care given to their teeth to prevent periodontal diseases. It is important, therefore, that I should show you some photomicrographs of cementum, as they will help us to understand why the soft tissues which have been separated from the roots of the teeth by periodontal diseases can become vitally re-attached, when aided by proper surgery. These photomicrographs are all the more necessary at this time since some writers still maintain that a reunion of these tissues is impossible.

The men who state that the soft tissues cannot become re-attached to the roots base their arguments on the old theory that cementum receives no nutriment from the pulp, and therefore dies and becomes a pus soaked sequestrum when separated from the pericementum by pyorrheal destruction. They claim that the reason why cementum does not receive nutriment from the pulp is because its first formed lamella is too compact to permit nutriment to pass through it. We shall see by these photomicrographs that nutriment does pass through this first lamella by osmosis, and that there is no scientific ground for the stand they take.

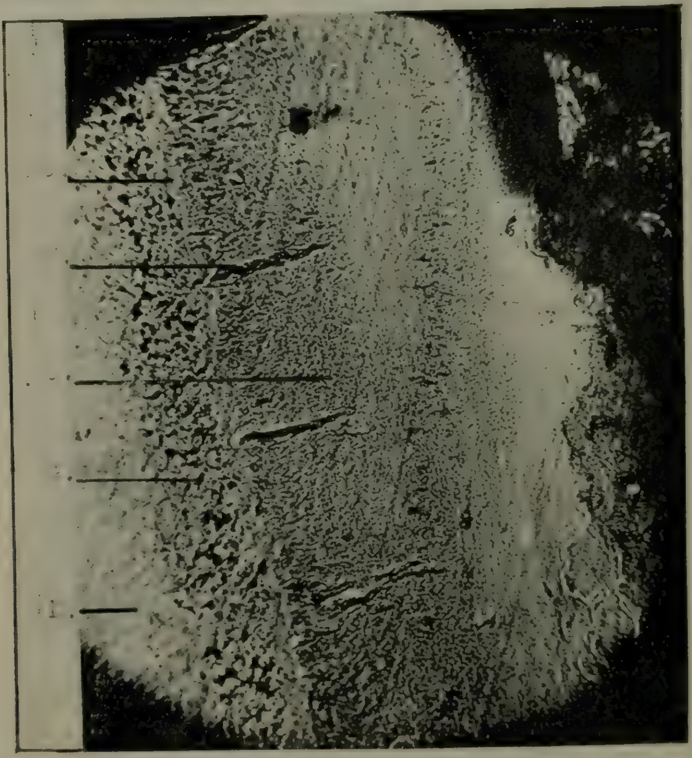

Fig. 4. Photomicrograph of a longitudinal section of the root of an adult human tooth, showing a case where the first formed lamella of cementum is more compact than the rest of the cementum. F.C., the first formed lamella of cementum. F., a large bundle of fibres. C, cementum. G, granular layer. D. dentine.

The first of this series of photomicrographs, which was taken from a longitudinal section of a young human tooth, shows the first lamella of cementum forming around the granular layer of the dentine. The cementum can be plainly seen in disconnected segments which show no tendency to form a dense impenetrable barrier to the passage of nutriment.

The second one of these photomicrographs shows a longitudinal section of the root of a tooth extracted from the mouth of patient sixty-five years of age. In this case there is absolutely nothing at the union of the cementum and dentine which can by any stretch of imagination be interpreted as forming a barrier to the passage of nutriment, but, on the contrary, some canaliculi of the cemental lacunae are directly connected with the granular layer of the dentine, a thing which our leading histologists have claimed does not occur. The only portion which is at all compact in its structure is the outer or last formed lamella, through which, all will agree, nutriment must have passed from the pericementum to the central portions of the cementum.

The third photomicrograph shows a section in which the first formed lamella is much more compact than the rest of the cementum. But with the magnification used in this case, which shows the cancellous character of the rest of the cementum, it can be seen that this lamella is also cancellous; it is only relatively more compact than the rest of the cementum. In addition to this, large bundles of fibres pass directly through the first lamella.

It should be remembered, however, that nutriment passes into and through cementum by osmosis, and that neither the lacunae with their branching canaliculi nor large bundles of fibres are essential to its passage. To illustrate this point, I will show a photomicrograph of cementum which is made up of two distinct types. Some of the lamallae in this section contain many lacunae, while others show no trace of them. Yet all will agree that nutriment must have passed into and through the one portion just as freely as into and through the other.

These photomicrographs furnish convincing proof that cementum has two sources of nutriment; it can be seen that it receives its supply from both the pericementum and the pulp. Therefore, if a portion of the cementum of a vital tooth becomes separated from the pericementum by pyorrheal conditions, it does not necessarily die, because the pulp continues to supply it with nutriment. And, if the involved cementum is living, it is biologically possible for the soft tissues to form a vital reattachment to it, when its surface is surgically freshened.

My own clinical work has convinced me that this theory is correct. In cases where I have operated correctly on the roots of vital teeth, the soft tissues have reunited rapidly, without any recession, and continued year after year to look as though they had never been separated. I have watched some of these cases for over sixteen years. May I ask how much longer we must wait before we can be sure that a reunion of the tissues has really taken place? On the other hand, I have not yet had a single case where the tissues have formed this sort of a reunion to the root of a pulpless tooth; they merely granulate and tighten around it. Other surgeons who employ my technique are meeting with exactly these results. If the involved cementum of living as well as of pulpless teeth were dead, why this difference in the healing?

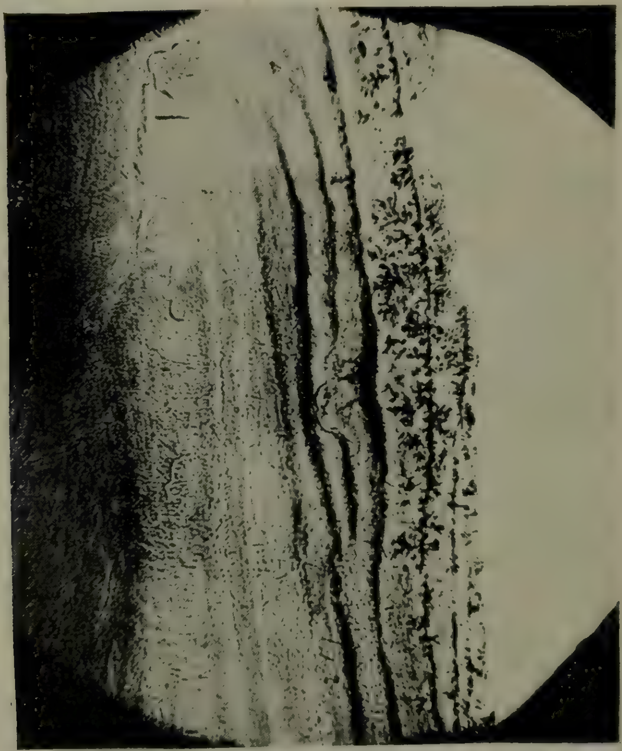

Fig. 5. Photomicrograph of a longitudinal section of human cementum, showing two distinct types.

If the men who oppose this theory regarding the cementum had a rational or successful treatment for pyorrheal lesions to offer, we should listen to them; but you all know they have not. They cut away the gums and bones from around the roots, leaving a condition which is usually worse than would result from extraction. Steps must be taken to protect the public against such practice.

Periodontia

With Special Reference to Diet and Dental Disease

Dr. Andrew J. McDonagh, Toronto, Can.

Read Before the Seventh Annual Meeting of the Academy of Periodontology, Boston, Mass.

Gentlemen of the American Academy of Periodontology: It is my privilege, this year, to deliver to you the time-honored president's address, a task for which I feel I am entirely unsuited, because as a charter member attending the meetings of this Academy every year, I realize what a president's address should be. Nevertheless, I appreciate the honor you have conferred upon me in permitting me to address you as your president.

This Academy has always very jealously guarded its membership. Few societies, if indeed any other, have the same method or machinery by which to select their members. With a selected membership of trained minds we should be able to do a great deal of good for humanity, and our activities should be directed to this effect.

In the past, we have tried to bring order out of chaos, in the matter of nomenclature as applied to our special field, and thanks to the nomenclature committee we believe we have succeeded very well. We have endeavored to standardize our methods of operating and our teaching of the subject. We have tried to solve the etiology of periodontoclasia and perform various other works; and this year you will be asked to consider a motion to regulate the granting of a degree of Fellowship in the Academy which will make that Fellowship something to be sought after, and to be proud of.

We have always had a good program for our meetings and intend that the one prepared for this meeting will be no exception in that respect; but it is my humble opinion that we should have a definite line of thought to follow, not only in our meetings, but during the interval between meetings; something upon which to concentrate. Probably it would have been profitable at this time to have followed that plan; but your program committee had such an abundance of unusually good things of a varied nature to offer you that it was thought unwise to try to specialize in any one definite subject.

DIET

Throughout the medical and dental world today, a great deal of attention is being paid to the question of diet and dentition, and it was thought that this would be a suitable subject for investigation by this convention; but on account of the overloaded state of the program, a paper on that subject had to be eliminated, and your president was requested to introduce it in his address, because it is so vital a subject and this so opportune a time for its presentation. Therefore, today, I am going to suggest to you that this Academy choose this line of thought for study.

A great deal of benefit to the profession and to the public will be accomplished by members of this Academy in concerted action, studying and recording facts in relation to human diet. Experiments have necessarily been done on animals for obvious reasons, and a great deal of data can be obtained in that way during the coming year, particularly by members of the Academy inquiring into the diet of their patients.

We have under our observation the results of diet. Therefore, if diet plays any such part in the human body, as it undoubtedly does in the lower animals, our studies should soon bring great reward. Of course the results will be slower because the conditions will be different and because the human being has a longer period of life than most lower animals have, and his organs develop more slowly, and in contrast to the animals he exercises free will.

In passing I might mention that this Academy has examined and indorsed a chart of the etiology of periodontoclasia, which is a wonderful work, splendidly thought out and exceedingly useful; but if experiments in feeding should show us that vitamines play such an important part in periodontoclasia, as they undoubtedly do in dentition, then the authors of that chart must necessarily modify it.

VITAMINES

Vitamines at the present time are the X's, Y's and Z's of diet; but we are rapidly approaching the time when they will not be unknown quantities. Most interesting experiments with vitamines have been made by Dr. Percy Howe, of Boston; Dr. and Mrs. Melanby, London, Eng.; Dr. McCollum, of Baltimore; Wells & Zilva, of the Canadian Army Dental Corps, and many others. For this address I intend just to touch on the work of those scientists in order that we may be guided in our forthcoming studies, noting only some of those onclusions which have not been successfully contradicted, s, for instance, that there are three distinct vitamines or groups of vitamines. The "fat soluble A," the "water soluble B" and the anti-scorbutic vitamines, and that they play a great part in metabolism.

There are two vitamines at present which greatly interest us as periodontists: Anti-scorbutic and fat soluble "A" vitamines. If you have a lack of the anti-scorbutic vitamine your feeding will produce scurvy; that is, besides other constitutional symptoms, the gums will become swollen, the bones softened and the teeth fall out, and if no relief is obtained death of the individual will follow. If the food lacks fat soluble "A" while the teeth and jaws are developing, the teeth and jaws will be badly developed. Incidentally you may have the condition known as Rickets produced at the same time.

Anti-scorbutic vitamine is fairly readily destroyed by heat; particularly heat of long duration, even though that heat be not very great in degree. This is a significant fact when we realize that the greater part of our food is subject to heat; in other words cooked. Some people practically never eat anything raw. Raw fruit they tell you does not agree with them, and as for "cold-slaw" or raw cabbage, they never use it.

Water soluble "B" vitamine, the one contained in anti-neurotic food, is not so easily destroyed and is widely distributed. We are less concerned with it, however, than with the other two well known vitamines, anti-scorbutic and fat soluble "A".

In 1905 Holst and Frolich, although they did not use the term vitamine, did a great deal of work on Guinea pigs; proving that it was a comparatively easy matter to give them scurvy by eliminating the anti-scorbutic vitamine, and, Wells and Zilva continuing experiments on Guinea pigs in 1918, showed that the pulps of the teeth were affected by scurvy.

We have been taught that in order to have good bones, solid jaws and good teeth, the food must contain the proper chemical ingredients. Later investigations have not discredited that teaching; but have shown that an animal cannot use calcium and other chemical substances, no matter in what form they are supplied, unless with them is supplied a vital agent or force, such as the fat soluble "A" vitamine has been proven to be. Therefore, by supplying the developing animal with a food containing only a trace of, or devoid of the proper vitamine, you provide that animal with dental organs which are useless or temporary as a functioning apparatus. And more than that you will find a great irregularity in their position, caused by the same diet; and according to these experiments, particularly the experiments of Mrs. Mellanby on puppies, the constituents of the food, not the density or degree of hardness of it are the determining factors, whether the animal shall have good or bad teeth and jaws developed, for, as she tells us, the food used advantageously was of a soft pappy quality, but contained the necessary fat soluble "A" vitamine.

I will here show you some illustrations from Mellanby's work which strikingly illustrate this fact. (Exhibits lantern slides.)

Notwithstanding these facts and also the fact that these experiments may be applied to man, let us digress a moment to say that reason would tell us that the lack of use of any organ or the neglecting of its functions, can only result in the destruction of that organ, and that either the neglect or perversion of function must always act detrimentally to an organ. Therefore, no matter how well the teeth and jaws are nourished in the foetus and in infancy, it is necessary for their health and well-being to supply them with the exercise nature intended for them; in a word, to *not* interfere with their function. This is plainly illustrated in modern as well as the past history of man. I remember seeing the skull of a North American Indian, who in life had evidently had the lower molars and bicuspids on the left side broken out by accident or an act of war. The remaining teeth in his mouth were well formed, perfectly in place and did not have a cavity except in the teeth which should have occluded with the left lower molars and bicuspids. These upper molars and bicuspids were elongated and covered quite thickly with calculus; showing that after they had lost their function nature did not take care of them. This showed also, that the excursions of food over the surfaces of the functioning teeth kept the surfaces of the latter free from accumulations.

The deplorable state of the teeth of people in England, which has been brought to light by the Government commission appointed for that purpose, would lead one seriously to consider cause and effect; taking the British public as their study.

IMPROVEMENT OF CHILDREN'S TEETH DURING THE WAR

In that study, we find that during the war something happened to greatly improve the teeth of the children. A report made by Dr. James Wheatley, county and school medical officer of Salop, shows that in that county a great improvement was made in children's teeth during the war, and this and other reports demonstrate the fact that in England, before and during the war, the teeth of the Jewish children were better than those of Gentiles; the same country, the same climatic conditions and a somewhat similar civilization. Naturally, we ask, "why?" Is it not a matter of diet? Is it not true that during the war it became necessary to use coarser grains as food, and to restrict the amount of sugar taken? And is it not also true that the diet of the Jewish children is always a little different from the diet of Gentile children? Also, are not the Jewish children more often breast-fed babies than are the Gentile children?

In the City of Toronto, according to our medical health officer, foreign born mothers in the proportion of 88 to 64 compared with native born, feed their babies at the breast and no doubt the babies' teeth show it.

These are some of the facts that we may learn concerning the human being.

Furthermore, we know by the skulls of the North American Indian, the Eskimo, the Maori and other divisions of the human family, that under certain conditions the teeth and jaws are developed so that there are no caries, and there is no dental periclasia so long as the individual jaw is functioning properly. The foregoing furnishes us with serious lines of thought.

EXPERIMENTS ON ANIMALS

In experimenting to elucidate human conditions, many different varieties of animals are used. Among the most interesting are the experiments made by Dr. McCollum and his co-workers. He has used, among other animals, cattle, and finds that by selecting the food he gives the cattle, he can so affect the subject experimented on that the function of reproduction is marvellously controlled, which is an astonishing fact. He finds also that the health of the animal is greatly affected through the selection of the kind of food given the animal. For instance, he feeds several cattle on corn, using the seed, stock and leaf, and allowing the cattle to have salt and water; and they carried the young to full term, and came through the period sleek, fat and healthy and in every case their offspring turned out to be good healthy calves, which lived and whose average weight was 75 pounds.

Another group of cows fed on wheat, produced young the reverse in all respects; born three or four weeks too soon, they were small and weighed on an average 46 pounds. They were either still-born or died within a few hours.

The production of the oat-fed mothers was almost as large as those from corn-fed mothers; the average weight being 71 pounds. Of these, one was still-born, two were weak and died in a day or two, and the fourth was weak, but with care lived.

The group fed on a mixture of the three plants, leaf and seed, produced young, weak in most cases; one being still-born and one living six days.

The mothers were kept on experimental rations and the following year they repeated in all essential details the reproduction records observed in the first gestation period.

The above is interesting, but if it only went as far as this it would not be of as much use to us in our work as we would like, yet there is a significance to us in these experiments of McCollum, particularly when taken in conjunction with Mrs. Mellanby's experiments on other animals, which experiments seem to show that if the offspring is badly nourished in one part of the body, it will be deficient in other parts. But let us see what has been done by Mrs. Mellanby.

Mrs. Mellanby's Experiments

She has paid particular attention to the teeth and jaws of puppies, guinea pigs and rats, or rather to their development and production as influenced by certain kinds of feeding. True, some of her statements seem to contradict those of Sims Wallace, when as a matter of fact her work simply elaborates, and to a certain extent explains the work done and the assertions made by Dr. Wallace. They were working from different viewpoints. Dr. Wallace was using his power of observation as to the result of a certain kind of feeding for human beings. Whereas Mellanby was experimenting with certain foodstuffs given to animals; but note how closely they agree in results. Sims Wallace says the child should be fed certain foods in order to produce good teeth and jaws, and should not be given soft foods and sweet things.

Mrs. Mellanby says: "Foods should contain the proper vitamines to produce good teeth and jaws."

Here are two columns: No. 1, recommended by Mellanby, and No. 2, by Sims Wallace:

Mellanby

Anti-Scorbutic Vitamine in—	*Fat Soluble "A" Vitamine in—*
Orange Juice.	

Lemon Juice.
Swede Juice.
Germinated Pulses.
Tomatoes.
Cabbage.
Fresh Beans.
Cod Liver Oil and other Fish Oils.
Butter.
Animal Fats except Lard.
Milk, not separated.
Eggs.
Cheese from whole Milk.
Cabbage.
Lettuce.
Spinach

SIMS WALLACE

Fish.
Meat.
Bacon.
Poultry.
Uncooked Vegetables.
Lettuce, Cress, Radish, Celery.
Cooked Vegetables less than uncooked.
Stale Bread with crust.
Toasted and twice baked Bread with crust.
Pulled Bread and Cheese.
Fresh Fruits requiring mastication.
Apples.
Fatty foods.
Tea, Coffee, Water.
Soups and Beef Tea.

When we compare them we find that Mellanby's experiments practically coincide with Sims Wallace's observations.

There are many articles of food which are not mentioned in either of the above columns, but which are being used every day by both civilized and uncivilized man upon which we have as yet no report. We have, however, a report upon which many much used foods that do not contain the proper vitamines, are consequently condemned by all investigators. For instance, white flour has no vitamine of any kind. In fact, the manner in which wheat is milled to get white flour precludes the possibility of vitamines being left in it; nor has polished rice, lard, skim milk, margerines, corn flour and several others. But it has not been shown that any or all of these foodstuffs cannot be used in the metabolism of the body, provided they are mixed with some other article which does contain the proper vitamine.

The evidence, therefore, seems to point to the conclusion that in order to have good teeth and jaws, we must use such foods as oranges; fish fats, such as cod liver oil; milk containing a large proportion of cream or butter; egg; some animal fats, not lards and that it is beneficial to use uncooked vegetables and fruits, or at least vegetables and fruits which are not cooked to excess.

Dr. Theobold Smith's Experiments

Perhaps Theobold Smith was the first, or one of the first to experiment on guinea pigs to prove that by feeding them a special diet he could give them scurvy. Scurvy (as a mouth lesion) so closely resembles the more common forms of periodontoclasia, that it lends itself to our study, at the present time, more than any other form of disease. It is one of the diseases which we can produce by feeding and can control. A diet of oats was used by Dr. Smith, and in less than three weeks the guinea pigs exhibited all the painful symptoms of scurvy. Their teeth loosened; their gums were red and swollen, and they had all the constitutional symptoms of that dread disease. This was about the year 1895.

Since then to the present time investigators have given this subject a great deal of attention, and all branches of medicine and dentistry are greatly interested today.

Relation Between Orthodontist and Periodontist

It is not by accident that the orthodontia and periodontia sections of the N. D. A. are associated. They are intimately connected. In order to be successful in one branch we must have the assistance of the other. The orthodontist must understand the operations of the periodontist, and the periodontist those of the orthodontist. Consequently, when Mrs. May Mellanby read a paper to the orthodontists she necessarily benefited at the same time the periodontist; and we are greatly interested in her findings. She tells us that by judicious feeding it is possible to make the teeth of puppies come in regular or irregular at will. This certainly opens a great line of study for our Academy, because it accounts for a great deal of gingivitis and traumatic occlusion. I say a line of study advisedly, as these experiments were performed on dogs, guinea pigs and other lower animals, and human beings may not respond just in the same way. As an instance of this, Darling reports that diet which would cause scurvy in one set of negroes in Africa, in another set would cause neuritis. Of course, it is hard to control the diet of a human being, and apparent differences may, in reality, be due to unreliable information.

Dr. Hess,s Work

Dr. Hess (*The Journal of American Medical Association,* Vol. LXV.), writing on infantile scurvy, gives us some help in our studies. He, as others, attributes this disease entirely to diet, and like others also shows that pasteurized milk is not as efficacious as raw milk, although it is more efficacious than dried milk in combating the disease; that no milk seems to contain as great a quantity of the proper brand of vitamine needed for that purpose as does fruit juice, such as the juice of oranges.

Interesting to us is this passage in Dr. Hess's writings, "bleeding of the gums is due to disturbance of the vessel walls, rather than a defect of the factors concerned in the normal coagulation of the blood." This disturbance of the vessel walls, taken in conjunction with slides of Hartzel and Box, which show the exposed or nearly exposed condition of the blood vessels, in many gingival crevices, may open up an avenue of investigation for members of this Academy, which up to the present time has not been thought of.

Let me suggest in passing, this disturbance of the vessel walls spoken of by Dr. Hess, may result from a scurvy diet, although all the symptoms of scurvy may not be apparent.

Is it not reasonable to expect to find some of the results of improper feeding in the human being displayed in the periodontal tissues, even though the acute stage of scurvy has not been reached? Indeed, that very condition is reported by present-day investigators who are using animals; and may we not hope to supplement their findings, and foster or forward such experiments?

These experiments will probably show us that the factors which are responsible for decay of the teeth are not the ones which cause periodontoclasia; that the factor or factors which are responsible for periodontoclasia have, as the factors in scurvy, the power of affecting the periodontal tissues when these tissues are adult, although the tissues need not necessarily be adult tissue.

Taking these facts into consideration, and the fact as Hess points out in the *American Journal of Diseases of*

Children, Vol. XLV. that one of the striking symptoms of scurvy is the susceptibility to infection, have we not food for thought for all our members, even those who lean toward the belief that we are constantly dealing with a germ disease in periodontoclasia? I have avoided saying very much about the work of Dr. Percy Howe in this connection, because Dr. Howe is to follow me in discussion and can speak for himself, so much better than I could speak for him.

Members of the American Academy of Periodontology, may we not hope that even this weak presentation of the subject to you today will stimulate a desire to study this subject in the coming year, and that every member will gain some benefit thereby?

DENTAL SOCIETIES

Dominion Dental College Examinations

The following have passed in Physics and Chemistry:—

Allon, E. F.; Atkinson, Wm.; Beattie, Preston; Bedell, Wilson; Brayley, R. E.; Cline, H. M.; Coon, A. W.; Coutts, W. M.; Crouch, E. M.; Dobbs, E. R.; Flett, D. M.; Flora, W. S.; Gauthier, J. A.; Greig, G. I.; Harvie, H. G.; Heather, M. P.; Hendry, W. R.; Honey, E. M.; Johnson, K. P.; Kemp, F. F.; Lawley, J. H.; Mann, S. C.; Martin, G. M.; May, C. H.; Mihaychuk, M.; Miles, R. L.; Mitchell, Wm.; Mumford, J. R.; MacDonald, N. S.; MacDonald, H. W.; MacDonald, H. C.; MacLean, F. J.; Nelson, C. A.; Newal, T. H.; Parrott, J. R.; Rowan, E. R.; Rubenstein, L. J.; Seal, G. D. H.; Smith, W. L.; Somerville, E. S.; Stewart, E. W.; Staughton, G. E.; Tanton, C. A.; Taylor, A. W.; Trueman, Wm. L.; Tucker, M. S.; Usher, C.; Whyte, J. P.; Williams, R. A.; Wilson, R. M.

The following have passed in Physiology and Histology—Allan, A. W. M.; Allen, E. F.; Atkinson, Wm.; Beattie, Preston; Bedell, Wilson; Cline, H. M.; Coon, A. W.; Crough, E. M.; Dobbs, E. R.; Flora, W. S.; Gauthier, J. A.; Graham, J. E.; Greig, G. I.; Harvie, H. G.; Heather, M. P.; Hendry, W. R.; Hobbs, H. E.; Honey, E. M.; Johnson, K. P.; Kay, L. D.; Kemp, F. F.; Lyons, G. W.; Mann, S. C.; May, C. H.; Mumford, J. R.; MacDonald, H. C.; MacLean, F. J.; McLachlan, H. T.; Nelson, C. A.; Nowal, T. H.; Noonan, R. L. A.; Pullar, T. G.; Rubenstein, J.; Smith, W. L.; Somerville, E. S.; Stewart, E. A.; Staughton, G. E.; Staughton, John O.; Tanton, C. A.; Towner, C. J.; Trueman, Wm. L.; Tucker, M. S.; Usher, C.; Vivian, F. W.: Ward, W. A.; Williams, R. A.; Wilson, R. H.

The following have passed in Operative Dentistry, practical—Rubenstein, J.

The following have passed in Prosthetic Dentistry (practical)—Rubenstein, J.

The following have passed in Operative Dentistry (written)—Dinnewell, R. E.; Gott, A.; MacKenzie, Annie S.; McDowell, W. A.; Rubenstein, J.; Teal, G. E.; Whyte, J. P.

The following have passed in Prosthetic Dentistry (written)—Akins, S. C.; Gott, A.; MacKenzie, Annie S.; Rubenstein, J.; Teal, G. E.; Whyte, J. P.

The following have passed in Anaesthetics—Dinnewell, R. E.; Holt, T. F.; McDowell, W. A.; Rubenstein, J.; Teal, G. E.; Whyte, J. P.

The following have passed in Materia Medica and Therapeutics—Akins, S. C.; Harvie, H. G.; Kerr, W. J.; Mitchell, Wm.; McDowell, W. A.; Niebel, E. H.; Rubenstein, J.; Turner, Wm. J.

The following have passed in Orthodontia—Dinnewell, R. E.; Dobbs, E. R.; MacKenzie, Annie S.; Rubenstein, J.; Smith, G. R.; Teal, G. E.; Whyte, J. P.

The following have passed in Medicine and Surgery—Daly, A. P.; Derbyshire, A. C.; Dinnewell, R. E.; Dobbs, E. R.; Holt, T. F.; Layton, N. Mc.; MacLeod, W. D.; Rubenstein, J.; Teal, G. E.; Whyte, J. P.

The following have passed in Pathology and Bacteriology—Akins, S. C.; Dobbs, E. R.; Flett, D. M. (Path.); Kerr, W. J.; Lauley, J. H.; MacDonald, H. W.; Niebel, E. H.; Rubenstein, J.; Whyte, J. P.

The following have passed in Jurisprudence and Ethics—Dinnewell, R. E.; Dobbs, E. R.; Mitchell, Wm.; MacKenzie, Annie S.; Rubenstein, J.; Teal, G. E.; Whyte, J. P.

The following have passed in Anatomy—Allan, A. W. M.; Allen, E. F.; Atkinson, Wm.; Beattie, Preston; Bedell, Wilson; Bliss, H. C.; Bradley, H. M.; Cline, H. M.; Coon, A. W.; Coutts, A. W.; Crough, E. M.; Dobbs, E. R.; Downe, F. N.; Flora, W. S.; Gauthier, J. A.; Graham, J. R.; Greig, G. I.; Heather, M. P.; Hendry, W. R.; Honey, E. M.; Johnson, K. P.; Kemp, F. F.; Lawley, J. H.; Maloney, Bertha; Mann, S. C.; Martin, G. M.; May, C. H.; Miles, R. L.; Mitton, G.; Morton, P. W.; Mumford, J. R.; MacDonald, N. S.; MacDonald, Hubert C.; MacKenzie, Wm. F.; MacLean, F. J.; McBain, W. W.; McLachlan, H. T.; McLeod, D. A.; Nelson, C. A.; Nowal, T. H.; Noonan, R. L.; Parrott, J. R.; Porter, J. R.; Ross, B. R.; Rowan, E. R.; Rubenstein, J.; Skilling, H. R.; Smith, W. L.; Somerville, E. S.; Stewart, E. A.; Staughton, G. E.; Staughton, John O.; Tanton, C. A.; Taylor, A. W.; Towser, C. J.; Treleane, R. L.; Trueman, Wm. L.; Turner, Wm. J.; Tucker, M. S.; Usher, C.; Walmsley, L. D.; Walsh, J. L.; Wansbrough, R. C.; Ward, W. C.; Weatherhead, W. A.; Webber, G. H.; Williams, R. A.; Wilson, R. H.; Woods, A. R.

Editorial

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Infection of Tooth Tissues

For some time there has been a discussion of the permeability of tooth tissues by drugs and infections. General practitioners have often felt that poisonous drugs when placed in the root canals of the teeth permeated the dentine to its full depth and in some cases entered the cementum. This view has been supported by the discovery of what seems to be a direct communication between the dentine and the cementum. On the other hand there are histologists who hold that no such communications exist and that fluids even, under pressure will not pass from one tissue to the other.

The matter is of more than passing interest because if drugs and infection freely pass from the canal into the cementum undoubtedly this tissue would become more or less weakened in vitality depending upon the resistance of the tissues and the virulence or strength of the poison. Finally the peridental membrane may die. This seems to be what happens to membranes the pulps of whose teeth have died many years previously; especially is this true if infection or strong drugs have been allowed to remain in the canal. Experiments made by more than one investigator would seem to indicate that there is a complete barrier at the junction of the dentine with the cementum. At all events staining solutions do not seem to pass.

Just what the explanation of these contradictory findings is does not appear at the present time.

The Relief Fund

There are treacherous wayside places on the highway of life. Many dentists fall among thieves and are stripped of their raiment and left wounded and destitute near the end of the way. Dentistry should be financially prepared to take care of our loyal members who meet with a San Francisco earthquake and fire, a Johnstown or Galveston flood or a Halifax disaster. No one knows when a wreck, explosion or some accident or great financial calamity may befall us, something which may take even the most frugal unaware, leaving us maimed and financially stranded without any visible means of support for ourselves or families. A little assistance from our Relief Fund will be of inestimable value to some of the indigent members of our profession who may have lost their all. Surely, one dollar is a very small sum for an annual contribution to such a worthy cause.

We have in our great national body men who have given their time, sacrificed their home, in fact their lives, for the advancement of the cause of dentistry. I know some of these men who have travelled over the country, giving lectures before various dental societies without having been reimbursed for either their travelling or hotel expenses. These men who have done pioneer work—the men who laid the foundation for the dentistry we are enjoying today—should not in their declining days be left to a cruel world by being compelled to live in public charitable institutions.

The wife of one of these pioneer dentists today is going from house to house in one of our large cities selling vegetables. Her husband died a few years ago. He contributed many original articles that helped to advance the cause of dentistry. He also was the author of one of our dental textbooks. This man was a real forerunner to modern dentistry for he appeared before dental societies for over forty years; in fact, he gave his very life's blood for the advancement of dentistry, without any thought of compensation. I know other men today who are absorbed in great dental research problems, the solution of which will very materially advance the cause of scientific dentistry. These patriotic scientists are giving their best for dentistry and humanity, without any thought of compensation. They are unable to make adequate provision for the proverbial rainy day. This non-productive period in each one of our lives is bound to come and why should not every member of the dental profession gladly and willingly contribute one dollar ($1.00) a year to the sale of Christmas seals. Let's say it with flowers while these men are still living. If we have neglected to discharge our bounden duty to these men who have done so much for us we should then be in a position to say it with dollars to those who are left to carry on the burdens of the family's existence.

The Relief Fund has grown from $3,500 in 1913 to $64,975.-74, July 15, 1921. The plan provides for the creation of an endowment of $100,000. When this amount is secured, then the money received from the interest on this fund, together with the amount collected from the continued sale of Christmas seals, will be available for relief purposes.

We are gratified with the fine spirit manifested by many members of our Association who annually make a contribution to this worthy cause. However, we are chagrined and unable to satisfactorily explain to ourselves why some men do not contribute to this fund, which means comfort for the declining days of many of our members. We want to think that it is just negligence, rather than deliberate indifference.

Thirty-five thousand packages of Christmas seals will be mailed on December 1. If every one, upon the receipt of these Christmas seals, will immediately return his cheque for at least $1.00, we will not only reach our aim of $100,000 this year, but we will have available for immediate relief purposes several thousand dollars. Many organizations, trade unions, and societies are manifesting a spirit of far-sightedness today in collecting funds in order that they may render practical service to their unfortunate members. The dental profession which has such high aims will not fail to discharge its obligation to the members of its own family.

Since the inception of this Relief Fund, an accurate ledger has been kept of the contributions received from individuals, and the total amount by states.

Canadian Teeth Good

A well-known British sociologist, going under the pseudonym of ''Lens,'' has been visiting Canada and the United States.

In the ''New Statement'' (London) he has been giving his impressions of our neighbors and of us.

Lately he has been talking about teeth.

In all America he says, he has encountered only one mouthful of neglected teeth, and one malodorous breath. ''That, I regret to say, was in Canada, in the mouth of a public man who, not unnaturally, was excusing himself from making a speech because his throat was giving him trouble.''

On the other hand, ''Lens'' refers in a complimentary way to teeth over here in general, and especially to the care taken of children's teeth.

''Who ever heard in England,'' he asks, ''of a pre-school dental clinic, such as I was told about in Toronto the other day?''

One of the pleasures of travelling in America, this writer considers, is the sight of any number of fine, regular, clean teeth in the mouths of the people. The contrast with Britain, he admits is notorious,, and has often been commented upon.

Dr. Harry Campbell, editor of the Medical Press and Circular, in a recent speech at Manchester, said of the British: ''We have the worst teeth of any nation. The state of our teeth beggars description. It is a national disgrace which should excite a feeling of shame and humiliation.

The consequence of dental diseases, according to Dr. Campbell, are (1) malodorous breath: (2) unsightliness (from irregularities, decay, long teeth): (3) pain (toothache, pain inflicted by dentist, fear of dentist): (4) reflex disturbances: (5) defective mastication (causing indigestion): (6) secondary local disease (abscess and cancer): (7) blood poisoning (arthritis, neuritis): (8) economic loss (loss of time; need of supplying army of dental surgeons).

''Lens'' has been trying to find out why Americans have so much better teeth than the British. Is it because of diet?

British experts have been telling the people to eat hard foods which exercise the teeth, to avoid ''mush'' and ''pap'' and to end a meal with fruit, such as apples, which leave the mouth clean.

''These fine teeth I see all around me in America,'' is Lens' comment, ''are certainly not the result of the protection afforded by the kind of dietary recommended by Dr. Sim Wallace and others in our country. The American does not exercise his teeth one whit more than we do. He is very partial to 'mush' and 'pap' in the form of breakfast foods. He is very fond of fruit, but he eats it not at the end of his meal, as Dr. Sim Wallace desires, but at the beginning. However he manages to protect his teeth, it is certainly not by the physiological means which our best students recommend. His diet, in respect of the demands it makes upon his teeth, is as entirely unphysiological as ours."

Lens does find however, that the diet of the American child is most abundant in milk and cream and butter, so that, with a few exceptions proving the rule, rickets is unknown. The spacing and enamel formation of American teeth are well-nigh perfect.

Great care, Lens finds, is taken of the teeth of school children, which must be compulsorily treated when necessary.

American dentists do believe in the tooth brush when properly used, and also in dental silk.

The average American, this Britisher finds takes much better care of his teeth than his cousins across the water, and is the subject of vastly superior dentistry. He is taught far more respect for his mouth and his teeth, and treats them accordingly.

People of Great Britain, Lens advises, need everywhere a better dietary for their children; far more qualified dentists and far fewer of the other kind, who recommend to their patients the blessings of artificial teeth, which cannot ache or decay.

American Institute of Dental Teachers

The Twenty-Ninth Annual Meeting of the American Institute of Dental Teachers will be held at The Windsor Hotel, Montreal, Quebec, on January 23, 24, 25, 1922.

An interesting program has been arranged built around the theme of Preventive Dentistry and its correlated subjects;—What, When, How and Why to teach. There will also be a complete exhibit of scientific teaching apparatus, college equipment, etc.

All interested in dental teaching are cordially invited to attend.

Guy S. Millberry, President
Abram Hoffman, Secretary-Treasurer.

381 Linwood Ave.,
Buffalo, N. Y.

Editorial Notes

Like many other dental clinics the Calgary clinic is far behind the demands.

The passing of Dr. Cryer brings to the minds of many, a career of a man of honest endeavor.

Compact facts about Canada worth having can be obtained from the department of the Interior, Ottawa.

The Public Schools of Saamich, B.C., have a fully equipped Dental Clinic running with Dr. H. J. Henderson in charge.

Beginning with the New Year we hope to publish a complete directory of all the dental societies of Canada together with the names and addresses of the officers.

The next Annual Meeting of the Kentucky State Dental Association will be held in Louisville, Kentucky, April 10-11-12, 1922, Seelbach Hotel—as Headquarters. A Clinical Program of unusual interest is being arranged. Address all correspondence to W. M. Randall, Sec'y, Louisville, Ky.

Dean Smith of Harvard Dental School says there will be two years of pre-dental teaching instead of one in a few years.

Dr. H. F. Kinsman, Sarnia, suddenly died in a hotel at Bruce Mines. He left home with a hunting party in apparently good health.

A writer in a local exchange extols the sign "American Painless dentist," as seen on the continent, because an American citizen knows that at that spot is to be found a fellow country-man. There is no more chance of finding an American citizen in such places than finding a Bostonian in every Boston laundry, tailor-shop or oyster house on this continent. Native dentists who have visited America or who have read an American dental magazine, choose the title for their offices or because they pretend to follow American methods of practice. It's just a means of advertising.

CORRESPONDENCE

Ontario Temperance Act

To the President of the Toronto Dental Society.

Dear Sir:

It will be remembered that when the Ontario Temperance Act came into force, the dental prescription was limited to six ounces.

Feeling this to be an unnecessary disability, the Ottawa Dental Society appointed a committee to interview the authorities with the result that the dental prescription was made one quart.

It was first suggested to limit the number of quarts per month but the committee objected and the matter was left to the discretion of the individual dentist.

Lately we have been advised that some dentists have been over-stepping the limit of ordinary requirements, which could hardly run over four to six quarts per month.

We wish to call the attention of the dentists of Ontario to the fact that, so far, the authorities have been reasonable and lenient and would seem to continue so as long as we do not abuse our privileges.

We feel that the least the individual dentist in Ontario can do is to respect the terms under which the increased privilege was granted and that it is not fair that less than five per cent. of our men should, by thoughtless selfishness, endanger the privilege of the other ninety-five per cent.

We believe that the situation regarding quantity was not fully understood and that this explanation will be all that is necessary to prevent further abuse of privilege on the part of the dentists of Ontario.

You are respectfully requested to distribute copies of this letter amongst the dentists of your district.

The Ottawa Dental Society.

The Cost of Dental Instruments

Dear Doctor Webster:—

I notice an article in the Dominion Dental Journal, October number, entitled "Saving in Purchase of Dental Instruments."

There are two erroneous statements in this article which I beg to call to your attention—as follows:—

First—"Students found that by purchasing instruments on demand in small quantities they paid more than regular prices and rightly so because their business was more or less of a nuisance."

Second—"This means something when one knows that the cost of selling Dental goods is more than forty five per cent."

In fairness to the Dental Dealers these statements should be corrected.

In my experience in the business covering a period of twenty-four years, and during that time being connected with four different companies, Students have always been given preferential treatment by the dealers both in the matter of price and service, have never been considered a nuisance but have been encouraged to make our depots their headquarters.

As regards the statement as to the cost of selling Dental goods, the percentage mentioned (over forty-five per cent.) is much in excess of the true figure.

The profit in the Dental Supply business is not such as to permit of a selling cost of over forty-five per cent., and a statement of this kind has a tendency to create an impression throughout the Canadian Dental Profession that exorbitant profits prevail.

It may be interesting to you to know that the wholesale discounts are established by the manufacturer and all Canadian prices are figured to allow the Dealers here the same margin of gross profit as the Dealers in whose country the goods are manufactured.

Trusting that you will give these corrections the same publicity in your next issue of Dominion Dental Journal as was given the above mentioned article.

Yours faithfully,
J. W. BRENT
Managing Director
Claudius Ash, Sons & Co., (of Can.) Ltd.

Editor—What we wished to convey in the Editorial in question and to which our correspondent takes exception, is that, as a matter of practice, the student buys in small quantities and rarely, if ever, takes advantage of the cash quantity discount, hence his goods cost him more than need be.

The second criticism of the Editorial revolves about the meaning of the "cost of selling." We intended the cost of selling to mean all the charges against dental goods from the manufacturer to the consumer. We meant to say that this is more than 45 per cent. on the manufacturer's selling price. This is really under-stating the fact because it ranges from 40 to 66 per cent., depending upon the kind of goods. We are pleased our correspondent directed our attention to these ambiguities in the Editorial in question. An Irishman has two chances to make clear his meaning, all others have until they are understood.

Reaction from Gold in the Mouth

To the Editor:

We inserted a bridge for the wife of a prominent surgeon here, and after a fair trial she believes she is getting a reaction from the gold, causing a peculiar taste in the mouth, also a sore tongue and she attributes this to the gold, not to any roughness. She also quotes several case-histories of friends to corroborate her viewpoint. No blame is attached to us but we are facing the problem of replacing the bridge with a denture and even with the extraction of inlaid abutments that may be vital for our reconstruction. Do you know whether gold and particularly gold solders ever cause this effect?

—Dentist.

Will some reader of the D. D. J. express an opinion on this problem?

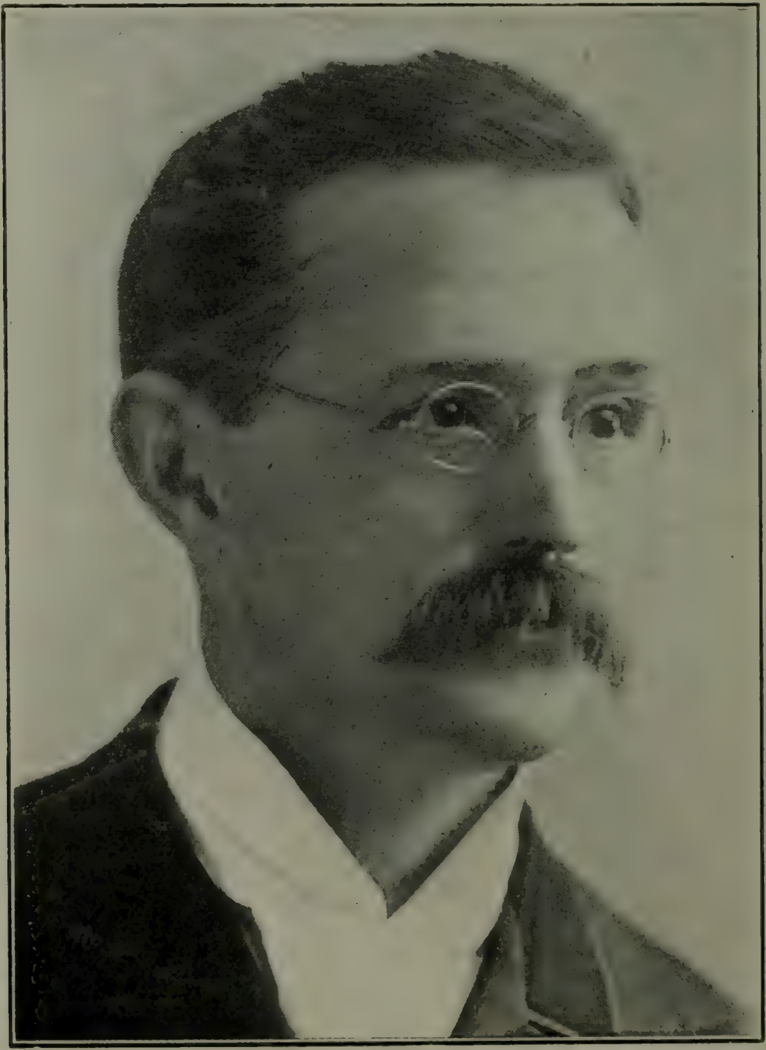
OBITUARY

Dr. R. J. Husband

On Tuesday, Nov. 1st, 1921, Dr. R. J. Husband, Dental Surgeon, suddenly passed away, in his home in Burlington. Dr. Husband, although not in his usual health for some time, had been able to be around, and continue his professional duties until the end came. His sudden death was a great shock to his family, and the whole community.

In the passing away of Dr. Husband, Burlington loses a most highly respected citizen, and the Dental profession one of the most widely-known, and one of the most sincerely esteemed among its members in Western Ontario.

Dr. Husband was born in Nelson Township, County of



THE LATE DR. R. J. HUSBAND

Halton, near the village of Zimmerman, on May 21st, 1847. In the neighborhood of Zimmerman he spent his boyhood, and received his Public School education. Having decided to adopt Dentistry as his profession, he attended the Dental College in Philadelphia, from which institution he graduated and subsequently took the steps necessary in order to practice in his native province.

Dr. Husband began the practice of his profession in Fergus. After a comparatively brief period in that town, he removed to the city of Hamilton, about 1883, and he remained and practiced in Hamilton practically all his professional life. In congenial partnership with his cousin Dr. Hamilton Husband, he commanded a large practice, and was generally regarded as skilful, and successful in his profession.

About three years ago Dr. Husband opened up an office in Burlington, in which town he had previously built a most comfortable residence, on Burlington Ave.

As a professional man, Dr. Husband was exceedingly popular, not only with his patients, but with the fellow-members of the Dental profession throughout the province. In 1894 he was elected President of the Board of Directors, of the Royal College of Dental Surgeons, Toronto. This position he held until 1896.

Dr. Husband was a Mason, and a faithful and consistent member of the Presbyterian Church. In Hamilton he was a regular attendant in St. Paul's Church, and was elected a member of the Church Session. After his removal to Burlington, he became a member of Knox Church, and again was elected to the eldership, and became a member of the Church Session. Dr. Husband was a member of the first High School Board of the town of Burlington, and was, to the last, deeply interested in all that concerns the social and educational and religious life of the community.

In 1881 he was married to Margaret Bunton, who survives him, along with two daughters; Mrs. Norman McPhie, of Hamilton and Mrs. Robert Hamilton, of Burlington.

Dr. Husband was in many respects an ideal citizen. The very soul of honor, he was consistently the ideal type of a Christian gentleman. He took a keen, and an intelligent interest in public affairs, and put himself behind everything which he believed to be for the good of the community. Uniformly, kindly in disposition, there was a charm in his home life, and he was generous in his benefactions, to all worthy objects.

On Thursday, Nov. 3rd, the funeral took place from his late residence to Hamilton cemetery. He will long live in the memories and hearts of those who knew him. Truly it can be said of him "He rests from his labors and his works do follow him."

B. S. Stackhouse, D.D.S., L.D.S.

One of the pioneer dentists in the province of Quebec has passed away in the person of Dr. Benjamin Stephen Stackhouse, D.D.S., L.D.S. Dr. Stackhouse died in the Ross Memorial Pavilion of the Royal Victoria Hospital.

Dr. Stackhouse, who was 72 years of age, was the son of Capt. and Mrs. John Stackhouse, and was born in St. Andrews East, Quebec, on February 17th, 1850. He graduated from Harvard University in 1874, and became a resident of Lachute, where he had lived a great many years, and has held a leading position in the province.

Dr. Stackhouse married in 1870, Miss Elizabeth Sauve, who died in 1882, by which marriage there were six children. In 1895 he married Miss G. Benedict, who died in 1915. His eldest son, Dr. B. J. Stackhouse died in Montreal in 1902. Dr. Stackhouse is survived by four sons and one daughter, Dr. Oswald C. Stackhouse, New York; Dr. Arthur W. Stackhouse, Montreal; Dr. Lorne A. Stackhouse, Cleveland, Ohio; and Mr. Russell T. Stackhouse, K. C. and Mrs. John Boyd, of Lachute. Dr. Stackhouse was a prominent member of the Dental Association of Canada.

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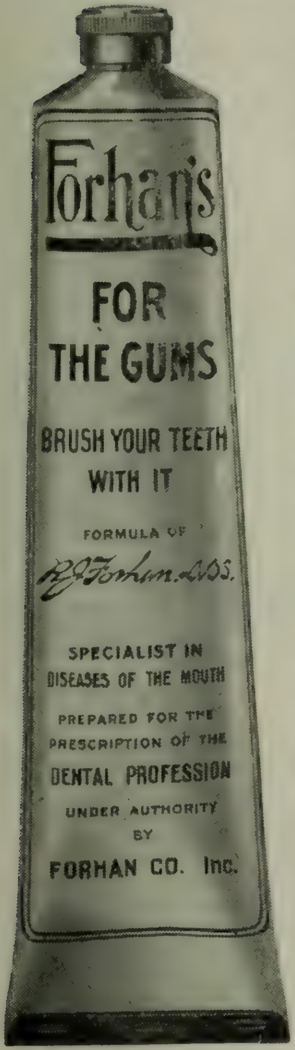
Pyorrhea Astringent



A recognized remedial agent—valuable for its healing, stimulative and bactericidal effect on the tissues. Its use in the treatment of pyorrhetic conditions of the gums accords with the soundest tenets of modern dentistry. This preparation is the formula of R. J. Forhan, D.D.S., and to insure its restriction to professional use, is not sold to retail druggists. Buy direct, using special offer coupon.

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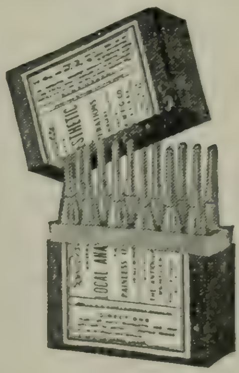

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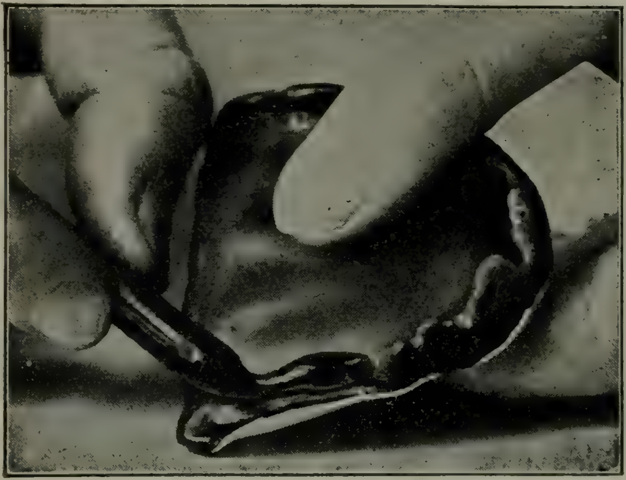

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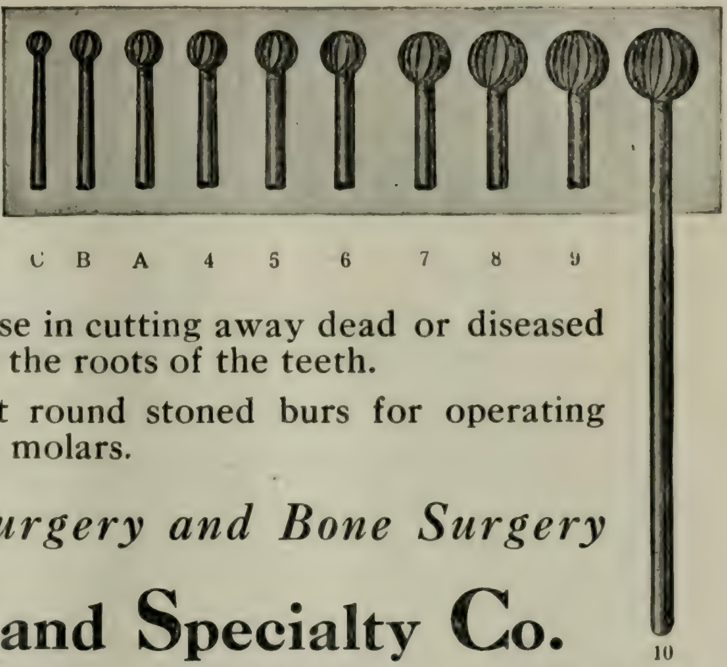

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